# Annual Report on Forest Management

**For the year April 1, 1997 to March 31, 1998**

Minister of Natural Resources of
the Province of Ontario

**To her Honour**
**The Lieutenant-Governor of the**
**Province of Ontario**

**May it please your Honour**

The undersigned begs respectfully to present to your Honour the Annual Report on Forest Management for the fiscal year beginning April 1, 1997 and ending March 31, 1998.

John C. Snobelen
Minister

October, 2000

Ontario

# Annual Report on Forest Management 1997/1998

FOREST INFORMATION SERIES

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# Executive Summary

In 1994, the Environmental Assessment Board (EA) in Ontario issued its decision on the Ministry of Natural Resource's (MNR) Class Environmental Assessment for Timber Management on Crown Lands in Ontario.

The EA Board's decision approved the timber management process MNR described to the board with 115 binding terms and conditions. One of these conditions requires MNR to make an annual report on Forest Management to the Legislature. This is the third such annual report.

This report is for the year 1997/98 but because of the time period when data was collected, some of the information refers to 1996/97.

MNR's forest management planning process has been undergoing significant improvements in recent years. The Crown Forest Sustainability Act (CFSA), which came into effect in 1995, requires anyone operating in a Crown forest in Ontario to ensure the long-term health of the forest so that all the benefits of Crown forests are available to future generations.

MNR has instituted changes affecting the responsibilities of the forest industry, the opportunities for the general public to become involved in forest management planning, the system for licensing forest companies, the fees paid to harvest wood, and funding for forest renewal, which is now stabilized through mechanisms that provide dedicated funding for renewal.

Ontario's inventoried land covers about 61.5 million hectares, with 40.3 million hectares classed as productive forested lands. The productive forested land on Crown land covers about 34.1 million hectares, with 26 million hectares of this area eligible for forestry activities. The focus of this annual report is to provide information on the activities on this 26 million hectares. This area is referred to as the Area of the Undertaking (or AOU) in the Environmental Assessment Board's Decision.

The Area of the Undertaking is now divided into 68 management units. The CFSA requires that an approved forest management plan be in place

for each management unit before any forestry operations may take place. A forest management plan covers a 20-year period and describes all the values of the forest in a management unit, and the harvesting, renewal and other forestry-related activities that will take place. A forest management plan is renewed every five years through a process that provides opportunities for public input. In 1996, 1997, 1998, and 1999, 63 forest management plans and contingency plans were approved and implemented.

The CFSA provides for two types of licences: Forest Resource Licences and Sustainable Forest Licences. In 1997/98, MNR issued a total of 4,096 licences covering a total of 28,665,270 hectares of productive forest area.

Figures for total harvest by area and volume used in this report are from 1996/97 because data collection on harvesting and other disturbances is not completed until late in a given year. In 1996/97, harvesting activities took place on 209,287 hectares. A total of 21,437,137 cubic metres of wood was harvested within the Area of the Undertaking. Forest fires occurred on a further 293,461 hectares of productive forest.

The CFSA requires a significant portion of the money paid by forest companies to be designated exclusively for forest renewal activities. In 1997/98, the Government of Ontario received a total of $285,172,400 for wood harvested, of which $107,109,200 went directly to funds designated for the renewal and maintenance of the forest, and for work associated with ensuring the future of the forest. In the same period, a total of $99,700,000 was spent on forest renewal activities.

Regeneration of the forest occurs both naturally and with assistance. In 1997/98, there was natural regeneration on 77,110 hectares of land. Assisted renewal occurred on 97,967 hectares. Site preparation activities, such as by mechanical means, chemical spraying, and prescribed burning, took place on another 93,205 hectares. In total, renewal activities were carried out on 286,098 hectares of productive forest.

Tending and protection activities were conducted to improve the quality and growth of some areas of the forest. During 1997/98, tending activities such as thinning were carried out on 101, 356 hectares of forest.

Forestry operations require a complex system of primary and secondary roads, the cost of which is now borne by forest companies. In 1997/98, 979 kilometres of primary and secondary road were constructed in Ontario forests to serve forest management activities. Maintenance work was done on another 14,630 kilometres of road.

This report discusses the efforts of MNR and of First Nations communities in 21 MNR districts to respond to Term and Condition #77 of the Timber Class EA decision and implement ways of achieving a more equal participation by Aboriginal peoples in the benefits of forest management.

MNR is responsible for monitoring compliance with forest management plans and standards. During 1997/98, a total of 2,939 inspection reports on forest operations compliance were submitted. A total of 35 infractions resulted in penalties being assessed.

All management units are audited at least once every five years. In 1997 Independent Forest Audits were conducted on seven Sustainable Forest Licence (SFL) Units — Pineland, Superior, Romeo Malette, Nagagami, Highrock, Lac Seul and Hearst and three non-SFL management units: Algonquin Park, Mississagi and Sapawe. In all ten cases the auditors recommended or were in support of licence renewal.

Part of MNR's monitoring responsibilities include assessing the impacts of forestry activities on the forest ecosystem over the long term. Chapter 10 of this report details research and scientific studies that MNR is undertaking to ensure that data and methodologies are available to monitor and manage effectively.

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# *Chapter* 1

# Introduction

Management of Ontario's forests has evolved through past decades from managing for timber to managing for all the values of the forest. With the introduction of the Crown Forest Sustainability Act (CFSA) in 1995, Ontario adopted a policy of managing Crown forests according to the principles of sustainability; that is, to conserve large, healthy, diverse, and productive forests and their associated ecological processes and biological diversity.

Forest management has also been guided by the Environmental Assessment Act. In 1988, the Environmental Assessment (EA) Board began an assessment of the Crown land timber management planning process of the Ministry of Natural Resources (MNR), which is responsible for forest management in Ontario. Six years later, after extensive public hearings, the Board released its decision on MNR's Class Environmental Assessment for Timber Management on Crown Lands in Ontario for a large part of the province, referred to as the Area of the Undertaking (AOU). The EA Board approved MNR's planning process for Crown forests with 115 terms and conditions. One of the conditions is that MNR prepare an annual report that provides the legislature and the public with information on Ontario's Crown forests.

This document is the third such annual report and covers the period 1997/98. However, the information on disturbances, such as harvesting, forest fires and insects, is from 1996/97, because this material is mapped and inventoried in the fall of the year in which it occurred, to allow time to complete the gathering of information. The gathering of information on disturbances is completed too late in any given year for the data to be included in a report on activities during that same year. New data, information, errors or omissions noted since the last report have also been addressed in this report.

For management purposes, Ontario's Crown forests are now divided into 68 management units, each of which is managed according to its own 20-year forest management plan. Each plan is renewed every five years through a process established in law. This report is both an introduction to the new forest management planning process and a report on the most

recent harvesting and renewal activities for the forest as a whole. The report includes a list of forest management plans in various stages of development that were implemented in 1996, 1997, 1998 and 1999 after approval.

This report includes an overview of the new licensing and revenue-generating system for forest management activities. It also presents information about Term and Condition #77 of the Timber Class EA decision by providing an update on MNR's progress on involving Aboriginal communities in the benefits of forest management.

Forest management activities and their effects are monitored by MNR to ensure that forest management plans are being followed appropriately and to check on the long-term health of the forest. These monitoring systems are explained in this report.

The report concludes with an overview of the ongoing activities and future directions of MNR, as required by the Timber Class EA decision.

With this report, MNR is providing material that will help the public gain an understanding of how Ontario's Crown forests are being managed. This report provides a baseline of information against which the public may compare future forest management activities and annual reports.

Other documents are available that provide information about forest management. They include:

- the Policy Framework for Sustainable Forests, which lays out the principles for managing forests sustainably in Ontario;
- MNR's Statement of Environmental Values, which sets out the environmental principles that govern MNR's management of Ontario's natural resources;
- the Crown Forest Sustainability Act;
- the Forest Management Planning Manual;
- the Forest Operations and Silviculture Manual;
- the decision of the Environmental Assessment Board on MNR's Class Environmental Assessment for Timber Management on Crown Lands in Ontario, which contains the reasons behind the EA Board's approval of the forest management planning process and the terms and conditions that the Board set on its approval;
- the Forest Resources of Ontario 1996, a snapshot of statistics on the state of Ontario's forests.

# Chapter 2

# The Forest Estate

Throughout this document, Crown land refers to land owned by Ontario for the people of the province and, in general, managed by MNR.

The total inventoried land area of the province of Ontario is about 61.5 million hectares, about 40.3 million hectares of which are productive forested lands. The productive forested lands consist of 34.1 million hectares of Crown land, 5.8 million hectares of private land, and 0.4 million hectares of federal land. The Crown productive forested lands are further divided into 26 million hectares where forest management activities take place, 3.6 million hectares of parks, recreational reserves and protection forest and 4.5 million hectares of Crown land outside the Area of the Undertaking (AOU).

## Ontario's Forest Inventory

Ontario has been inventorying its forests since 1922. Using aerial photographs and field checks, MNR classifies forest stands and other areas into broad physical components such as productive forest, non-productive forest, non-forested land, and bodies of water, creating the Forest Resource Inventory (FRI). Each component is further classified by its ownership and land use. This inventory provides a baseline of information for management planning and for monitoring the health of the forest. FRI material was used to help prepare this report.

A new inventory is conducted on each management unit approximately every 20 years and must be updated at the start of each new forest management plan.

The FRI must reflect all changes to the forest (i.e., depletions and accruals) that occurred prior to the commencement of a new forest management plan. Depletions include harvest and natural reductions, such as those through wildfire, insects, disease and blowdowns. Accruals include the results of forest renewal and tending activities for both assisted and naturally regenerated areas.

Figure 1 illustrates all the land classifications within the inventoried area in Ontario. A detailed table of all land classifications within the inventoried area can be found in Appendix 1.

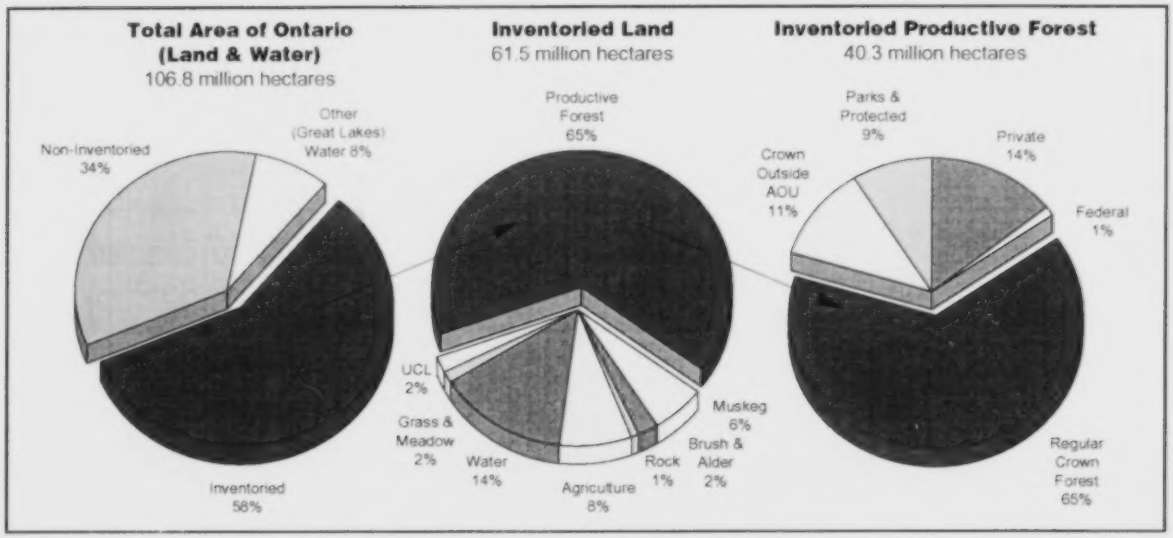



**Figure 1**

**All Land Classifications within Inventoried Area**

Crown, private and federal proportions of the productive forested areas in each of MNR's three administrative regions are shown in Figure 2.

**Figure 2**

**Ownership of Productive Forested Lands in Ontario (000's hectares)**

| Ownership | Northwest Region | Northeast Region | Southcentral Region | Total |
|---|---|---|---|---|
| Crown | 17,370.9 | 14,909.3 | 1,859.3 | 34,139.5 |
| Private | 642.1 | 1,774.4 | 3,347.6 | 5,764.1 |
| Federal | 158.3 | 228.2 | 12.4 | 398.9 |
| Total | 18,171.3 | 16,911.9 | 5,219.3 | 40,302.5 |

Ontario has three major forest regions: the Deciduous Forest in southern Ontario, the Great Lakes–St. Lawrence Forest in southern and central Ontario, and the Boreal Forest in northern Ontario. Apart from provincial parks, there is little Crown land in southern Ontario.

Each forest region has distinct ecosystems, the extent of which are largely determined by temperature and precipitation ranges. Each region has trees, plants, birds, insects and other wildlife characteristic to its type. There are broad zones of natural transition from one ecosystem to another. The forest regions of Ontario are shown in Figure 3.

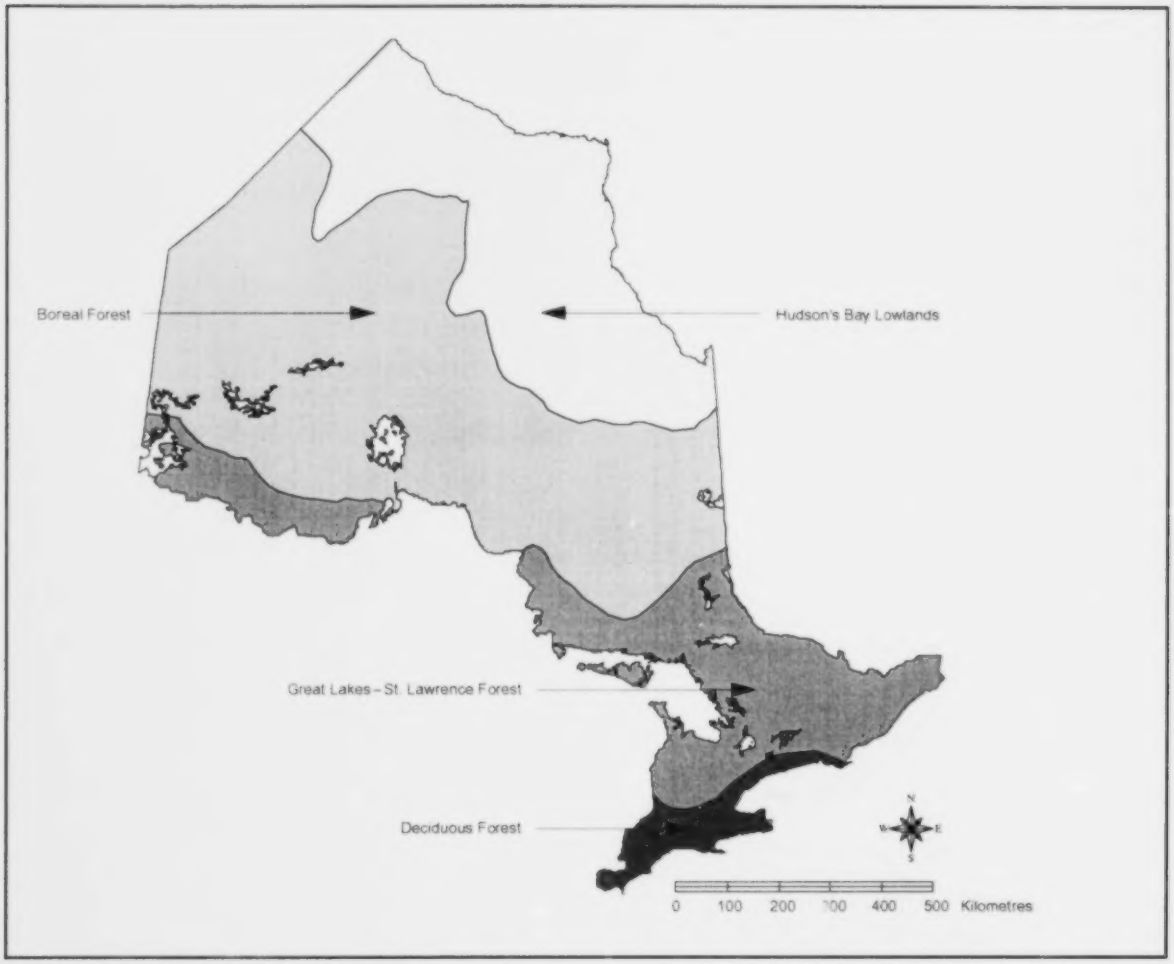



**Figure 3**

**Ontario's Forest Regions**

**The Deciduous Forest** is found in the most southern part of the province, mostly in concentrated pockets on private land and within provincial parks on the north shore of Lake Erie. This is the only occurrence of the Deciduous Forest in Canada.

The major deciduous species are sugar maple, beech, basswood, red maple and several oaks. In the most southern portion of this region, Carolinian species such as tulip tree, cucumber tree, pawpaw, red mulberry, Kentucky coffee tree, black gum, sassafras and redbud are found. Species such as black walnut, sycamore, swamp white oak, shagbark and bitternut hickory, butternut, rock elm, silver maple and blue ash are largely confined to this region. Conifers such as white pine, cedars, hemlock, spruce and tamarack occur throughout.

The extent of the Deciduous Forest Region is about three million hectares. Less than 15 per cent is actually forested, with only about 8,200 hectares of the forest (.003 per cent) owned by the Crown. More than 75 per cent of this forest region is agricultural land. Most of the remaining land is urban.

Human activity in the south has greatly modified the forest, which is now mostly restricted to areas with low agricultural potential. However, forests in this region are among the most productive in the province.

**The Great Lakes-St. Lawrence Forest** covers a broad band occupying the southern portion of the Precambrian Shield and the limestone area north of the Deciduous Forest. It is characterized by white and red pine and maple. Other conifers in this region are jack pine, black and white spruce, tamarack and cedar. The shade-intolerant hardwoods found in this region are poplar and white birch. The shade-tolerant hardwoods, in their relative order of occurrence, are hard maple, oak and yellow birch. Other hardwoods such as soft maple, black ash, beech and basswood can also be found in this region.

In the central and northern part of the region, the land is predominantly owned by the Crown. In the southern part of the Great Lakes-St. Lawrence Forest, there is a large amount of privately owned forests, which are managed for forest products, recreation, wildlife habitat and other environmental benefits.

**The Boreal Forest** is a global band of conifer-dominated forest that stretches across Scandinavia, Russia, Alaska and northern Canada. In Ontario, the Boreal Forest extends from the northern limits of the Great Lakes–St. Lawrence Forest to Hudson's Bay.

The Boreal Forest is characterized by conifers such as jack pine, black and white spruce, and balsam fir, together with deciduous species such as poplar and white birch.

This forest region is by far the province's largest. Part of the Boreal Forest is further divided into the Hudson Bay Lowlands, based on subarctic climate and its low site productivity. Most of the land in the Boreal Forest region is Crown Land.

The Boreal Forest is influenced by natural disturbances such as fires, heavy winds and insects, which can affect large areas of forest. During the last 80 years, timber harvesting and forest fire prevention efforts have affected the mix of tree species and ages of the Boreal Forest in the Area of the Undertaking.

## Private Woodlands

Private woodlands, at 5.764 million hectares of productive forest area, comprise 14 per cent of the inventoried productive forest area in Ontario. About 43 per cent of these are located in Northern Ontario with the remainder in Southern Ontario. In the southwestern portion of the province private woodlands represent in excess of 90 per cent of the total area of woodlands and so take on a special significance.

The Ministry's commitment to healthy forest ecosystems extends to these private forests, although it does not have the same direct stewardship responsibility as for Crown Forests. MNR's Private Woodlands Strategy 1991 outlines how MNR will seek to influence the sustainable management of the province's private woodlands through

- coordinating the programs and efforts of the many agencies and groups interested in promoting stewardship;
- providing education and skills training opportunities for landowners to become more knowledgeable about stewardship;
- providing effective policies as incentives to stewardship of woodlands.

In 1997/98 MNR continued to implement the Ontario Stewardship Program which started in 1995/96. Led by MNR's 35 Stewardship Coordinators, community stewardship councils consisting of landowners, interest groups, associations and resource management agencies are working together to meet collective community-based stewardship goals. There are about 500 councilors, all of whom are well-connected with local land and resource-based organizations. This program provides

- a forum for determining and expressing local needs and concerns;
- for improved coordination of resource agency resources and program delivery;
- for enhanced access to information and educational opportunities;
- for enhancing partnerships, teamwork, respect and understanding between landowners and those with an interest in the land and its environmental, social and economic benefits.

In 1997/98, the Ministry, in addition to providing the funding for the Stewardship Coordinators, made available grants totaling $500,000 to approximately 39 local councils to assist them in levering additional funds to carry out local projects. This support encouraged 550 projects that

ranged from conducting workshops on woodland tax and estate planning to restoring native vegetation in schoolyards.

In recognition of the importance of maintaining private woodlands for public benefits, MNR designed and implemented the Managed Forest Tax Incentive Program (MFTIP) in 1997. The Ontario Woodlot Association and the Ontario Forestry Association are partners in the delivery, and handle most of the public inquiries and program administration. The MFTIP is a replacement for the former Managed Forest Tax Rebate Program. The main features of MFTIP are the requirement to have in place a Managed Forest Plan to enter the program, and a reduction in property value assessment leading to lower property taxes. The plans must be approved by a Managed Forest Plan Approver – part of a network of over 100 private consultants who help to maintain the program's standards.

# Chapter 3

# Forest Management Planning

In 1995, the Crown Forest Sustainability Act (CFSA) came into effect. The CFSA mandates that the province's Crown forests be managed to ensure they remain large, healthy, diverse and productive.

Since the CFSA became law, MNR has been active in implementing the requirements of this legislation, which include well-defined management planning for the forest and public participation in the process.

Under the terms of another piece of Ontario legislation, the Environmental Assessment Act, the Environmental Assessment (EA) Board reviewed MNR's planning process for Crown forests and approved it, with terms and conditions. Many of these Terms and Conditions are referred to in this report.

To handle the management of Ontario's Crown forests, the province is divided into management units. MNR requires an approved forest management plan to be in place in each management unit before any forest operations are undertaken. Each plan must ensure that the long-term health of the forest is covered. A map of Ontario showing the location of all management units is included as Appendix 2. The key to the map identifies the names of the management units, and indicates who has forest management planning responsibility (i.e. Crown [MNR] or a Sustainable Forest Licence holder).

In recent years, there has been an amalgamation of some management units to realize efficiencies and improve implementation. As of April 1999 there were 68 management units, and additional amalgamation proposals were being evaluated.

Forest management plans are prepared according to the Forest Management Planning Manual, which directs how planning is to be carried out, monitored, reported on and evaluated.

All forest management plans have a 20-year perspective and a five-year plan of operations. The five-year plan lays out what may be harvested, how it may be harvested, how harvested forests are to be renewed, and how other values, such as archaeological sites, wildlife habitat or recreational facilities are to be protected.

MNR monitors plan implementation for each management unit to ensure that the plan is followed appropriately. All plans are renewed on a five-year planning cycle. A period of approximately 24 to 27 months is required for the preparation, review and approval of a forest management plan.

In accordance with the requirements of the Timber Class EA decision for an annual report, the forest management planning schedule for management plans to be implemented in 1996, 1997, 1998 and 1999 is shown in Appendix 3.

**The Forest Management Planning Manual**

**The Crown Forest Sustainability Act requires that forest management plans be prepared and approved following the Forest Management Planning Manual. The manual provides direction on how to determine sustainability and requires that information, such as the following, be included in a forest management plan:**

- **an environmental, social, and economic description of the management unit**
- **long-term strategic direction for the management of the forest, including how sustainability is measured through the analysis of a range of management alternatives and the selection of the preferred alternative, the determination of areas eligible for operations during the 20-year period of the plan, and the planning of primary access corridors for the 20-year period**
- **areas of operations, the development of operational prescriptions, and the determination of primary and secondary access road locations for the five-year term of the plan**
- **a description of the program for monitoring forest management operations, and assessing renewal success**
- **supplementary documentation and a forest management plan summary**

# Chapter 4

# Forest Users and Government Revenue

Ontario's Crown forests provide the forest resources for a diverse number of forest-based industries, including construction materials, pulp, paper and newsprint. Crown forests also provide opportunities for tourism, recreation, trapping, hunting and fishing and food production. In addition, service industries and facilities that support forest activities also depend on Crown forests.

In 1997, the forest industry contributed significantly to the economy of Ontario with shipments worth more than $15 billion. Direct employment by the forest industries in Ontario was 70,252, indirect and induced employment employed another 94,748.

In 1997/98, 51 Ontario communities, located mostly in northern Ontario, had at least 20 per cent of their labour force employed in the forest industry, as shown in Appendix 4. The appendix also shows their labour force and what percentage worked in the forest sector.

As well as being a major employer, the forest industry annually invests in capital improvements and mill expansions. In 1996 the forest industry had capital and repair expenditures of $1.6 billion. In 1997 capital expenditures were almost $1.3 billion.

In addition to making payments to the Forest Renewal Trust Fund and the Forest Futures Trust Fund the forest industry also paid over $178 million to the Ontario government's consolidated revenue fund through stumpage payments from the harvesting of Crown timber.

## The Forest Products Industry

The forest products industry is comprised of the logging industry, the wood industries, paper and allied industries and other related industries such as the manufacture of furniture and fixtures.

The logging industry is made up of both large and small contractors, as well as large, mill-owned operations. The contractors may work independently or directly for company-owned mills.

The wood industries include businesses such as sawmills, veneer mills, structural board and plants producing construction materials and specialty wood products. The capital investment in these mills range from a few thousand to several million dollars.

Pulp and paper mills are the largest type of plants for converting timber fibre to forest products. A greenfield pulp mill can cost upwards of one billion dollars. Their output represents over 60 per cent of the value of all forest product shipments.

Figure 4 shows the distribution of various manufacturing activities by sector, and direct employment within each sector.

**Figure 4 Distribution of manufacturing activities by sector and direct employment within each sector**

| | No. of Establishments | | No. of Employees | | Total Value Added | |
|---|---|---|---|---|---|---|
| Sector | Number | % of Canadian Total | Number | % of Canadian Total | Value Added ($ Millions) | % of Canadian Total |
| Logging | 1,756 | 20 | 6,232 | 14 | 597 | 14 |
| Wood Industries | 680 | 23 | 28,769 | 22 | 1,928 | 19 |
| Paper & Allied Industries | 314 | 45 | 35,251 | 34 | 4,325 | 33 |
| Total | 2,750 | 22 | 70,252 | 25 | 6,850 | 25 |

Source: Statistics Canada, 1997

## The Licensing System

The majority of Ontario's forests are harvested by companies or individual operators that hold one of two types of licences: Forest Resource Licences (FRLs) or Sustainable Forest Licences (SFLs). The total land under licence is shown in Figure 5.

In 1997/98, 11 new SFLs were signed bringing an additional 6,175,520 hectares under licence in this category.

**Figure 5 Crown production forest area under licence 1997/98 by licence type**

| Licence Type | Number of Licences | Productive Forest Area (hectares) |
|---|---|---|
| FRL < 100 ha | 3,800 | 50,830 |
| FRL > 100 ha | 222 | 5,171,450 |
| FRL: Salvage | 26 | 14,010 |
| SFL | 48 | 23,428,980 |
| Other Licences | 0 | 0 |
| TOTAL | 4,096 | 28,665,270 |

## Forest Management Responsibilities in Ontario

An SFL requires a licensee to prepare forest management plans, following the direction of the Forest Management Planning Manual. The licensee is responsible for implementing forest management plans by carrying out access, harvest, renewal and maintenance activities. The SFL holder must follow the rules set by MNR to ensure forests are sustainably managed.

With FRLs, the licence holders operate under Forest Management Plans approved by MNR, requiring the holder to operate in a way that ensures the long-term health of the forest.

## Ontario's Stumpage System

In 1997/98, the Government of Ontario received direct payments from the forest industry in the form of royalty or stumpage payments, and indirect payments in taxes.

Forest companies pay a stumpage fee to the Crown for every cubic metre of timber harvested. MNR uses a market-based pricing system to calculate stumpage fees to ensure the province receives a fair return for its resource. In times of strong market prices for forest products, the market-based system triggers higher fees. In times of low prices, forest industries pay lower fees.

The Crown's stumpage fees are made up of three parts:

- A fixed minimum charge per cubic metre of harvested timber, regardless of species harvested, that goes into the consolidated revenue of the province. The minimum charge was raised by $1.34 on April 1st, 1997 from $1.50 to $2.84 per cubic metre. This charge is adjusted annually.
- A forest renewal charge to provide dedicated funding for forest renewal. This charge varies depending upon the tree species and the anticipated renewal cost for that species. Forest renewal charges are held in either a Forest Renewal Trust fund or a Forest Renewal Special Purpose Account and may only be reinvested in maintaining the health of Ontario's forests.
- A residual value charge, paid to the province's consolidated revenues by forest companies or individuals licensed to harvest timber. The calculation of this charge varies from zero in times of low product prices to about $20 per cubic metre in times of high product prices.

The forest industry also pays into the Forestry Futures Trust fund through a charge of $0.48 per cubic metre of timber harvested. The Forestry Futures Trust fund is a fund which is used for silvicultural purposes such as regenerating forests which have been damaged through natural disturbances caused by insects or disease.

A special conversion charge of $0.38 per cubic metre of harvest is applied to all timber harvested by SFL holders. This charge is used to assist the new smaller SFLs with costs associated with the establishment of an SFL (e.g. inventory).

Figure 6 shows the direct payments from the forest industry to the various government accounts during the last five fiscal years. The Forest Renewal Special Purpose Account will be phased out once all Crown management units, currently under direct management by MNR, have been converted to SFLs.

In addition to direct payments to government revenue and renewal accounts, the forest industry pays a significant amount annually in taxes.

**Figure 6**

**Payments by the Forest Industry ($000s)**

| Year | Area Charges | Forestry Futures | Consolidated Revenue | Forest Renewal Trust | Forest Renewal Trust & SPA***** | Total Payments |
|---|---|---|---|---|---|---|
| 1992-93 | 9,300.7 | | 63,094.0 | | | 72,394.7 |
| 1993-94 | 19,723.0 | | 85,025.6 | | | 104,748.6 |
| 1994-95 | 14,366.6 | 6,000.0* | 98,674.8 | | 32,960.7 | 152,002.1 |
| 1995-96 | 9,905.8 | 7,121.3** | 89,162.2 | 58,628.6 | 36,505.5 | 201,323.4 |
| 1996-97 | 11,269.7 | 7,861.4 | 111,669.0 | 51,628.9 | 34,755.1 | 217,184.1 |
| 1997-98 | *** | 10,576.7**** | 178,063.2 | 52,373.5 | 44,159.0 | 285,172.4 |

* Initial contribution by MNR

** For the period February 7, 1995 to March 31, 1996

*** Area charges are no longer collected separately; they were incorporated into the minimum charge which is part of the funds payable to the Consolidated Revenue Fund.

**** Includes conversion funds of $4,428,900 collected in 1997/98.

***** Amounts are as of March 31, 1999.

**Note:** Funds in the Forest Renewal Trust, the Forest Renewal Special Purpose Account, and the Forestry Futures Trust are not considered revenue by the Province, although funds in the Forest Renewal Special Purpose Account are held in the province's Consolidated Revenue Fund.

# Chapter 5

# Forest Disturbances

Forest management attempts to regulate or adapt to "disturbances" within the forest, either natural (insects, disease, weather calamities, forest fires) or human activities (e.g. harvesting). These disturbances are numerous and occur throughout the forest life cycle, as illustrated in Figure 7.

Disturbances are measured in terms of forest area (hectares) and volume (cubic metres) of trees killed, damaged or harvested; the degree to which a forest stand must be impacted by these disturbances before the inventory description is changed is a subjective decision. Thus, the change in volume and area in a forest stand that result from natural mortality every year is not usually significant enough to be recorded for inventory update purposes. For example, chronic diseases such as root rot may kill only a few trees scattered throughout a forest stand. Therefore no area loss is recorded for this disease, but an estimate of the volume of wood in the dead trees and volume of growth loss in the remaining live trees will be made. The most significant disturbances are reported in the fall of the year

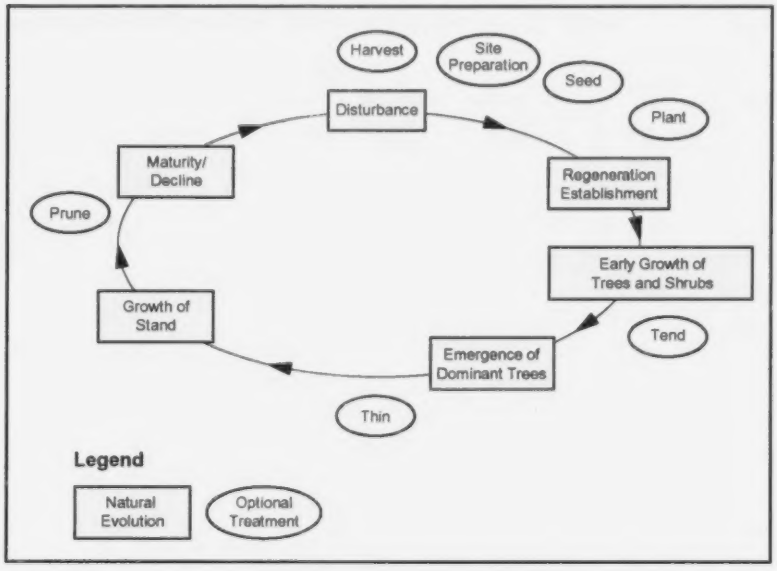



**Figure 7**
**The Forest Life Cycle**

following a disturbance. Thus, the most recent disturbances reported in this 1997/98 report actually occurred during 1996/97. Reporting is delayed to allow time to completely map and inventory all disturbances that occurred during a given year.

## Harvesting

The level of allowable harvest in a management unit is determined through the forest management planning process. MNR requires that the allowable harvest for a management unit be set at a level that will sustain a healthy forest over time. Harvesting in each management unit is controlled and monitored according to the approved forest management plan. These plans specify both allowable harvest area and the associated volumes. However control of the allowable harvest is by area.

Harvesting in Ontario is one of a series of actions which represent a silvicultural system. Silvicultural systems combine harvesting, forest renewal and tending and are classified according to the method of harvesting.

## Silvicultural Systems Used in Ontario

Ontario uses three silvicultural systems.

### Clear-Cut System

Merchantable growth is harvested in one operation, with or without leaving seed trees. Harvesting may be done in blocks, strips or patches. Regeneration can be natural or assisted. This method will produce stands in which all the trees are at about the same period of growth or age-class, it is referred to as even-aged management.

### Shelterwood System

Mature trees are harvested in a series of two or more cuts to encourage natural regeneration under the residual trees. This may be done by cutting uniformly over the stand area or in narrow strips. This method is also even-aged management.

### Selection System

Mature and undesirable trees are continuously removed individually or in small groups over an entire area, over the forest life cycle. This method produces stands in which trees are of different ages and is referred to as uneven-aged management.

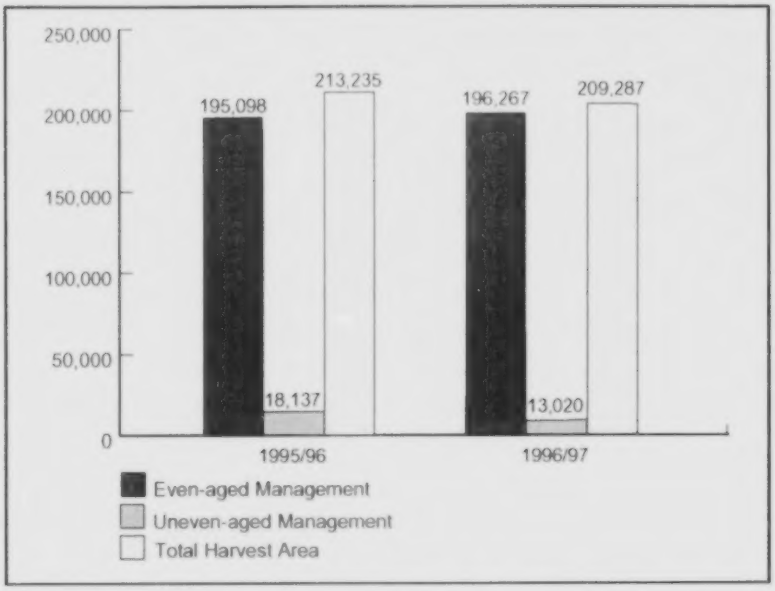



**Figure 8**
**Harvest Area (hectares) 1996/97 by Management System**

The break-down of the total provincial area harvested in 1995/96 and 1996/97 into the even-aged and uneven-aged management systems is illustrated in Figure 8. This figure shows that the overall total harvest area decreased in 1996/97 from 1995/96 by about 3,900 hectares, predominately in the area managed using uneven-aged management.

Figures 9, 10 and 11 show the provincial harvest areas and volumes, fire disturbances from 1992 to 1996, and total area harvested in 1995/96 and 1996/97, by MNR administrative region. As Figures 9 and 10 show, during this period the annual area and volume harvests were at their lowest level in 1992. Annual harvest area peaked in 1994, and annual harvest

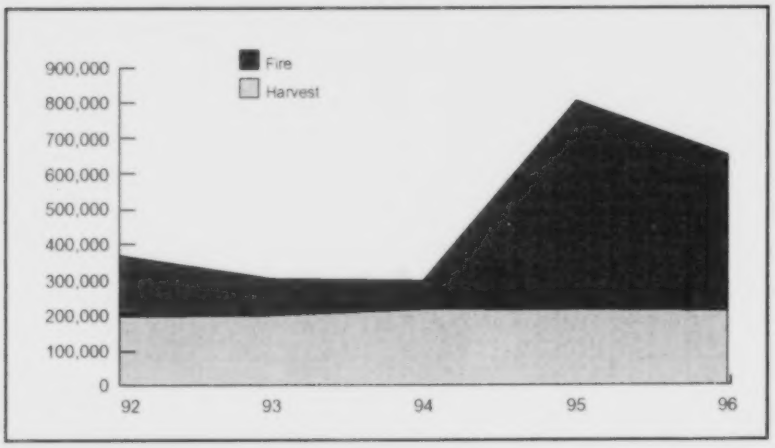
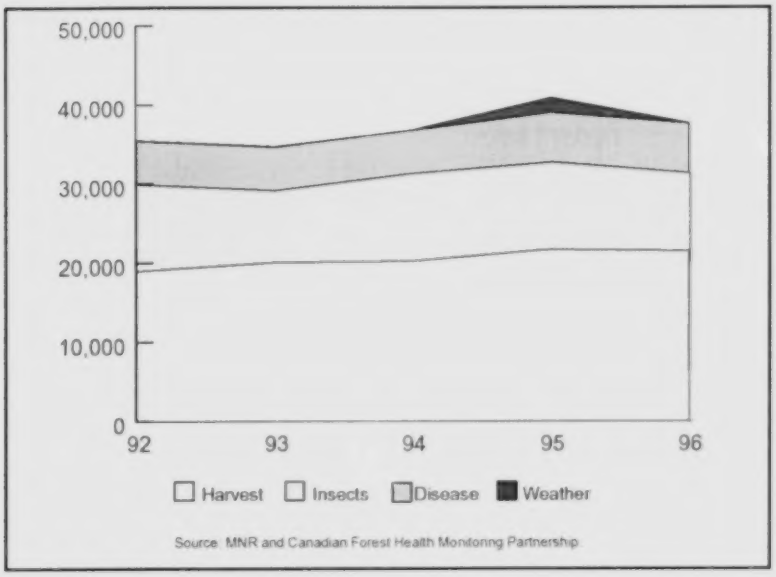



**Figure 9**
**Forest Area (hectares) Disturbed by Harvest and Fire 1992-96**

**Figure 10**

**Wood Volume (000's m³) Harvest and Other Disturbances 1992-96**

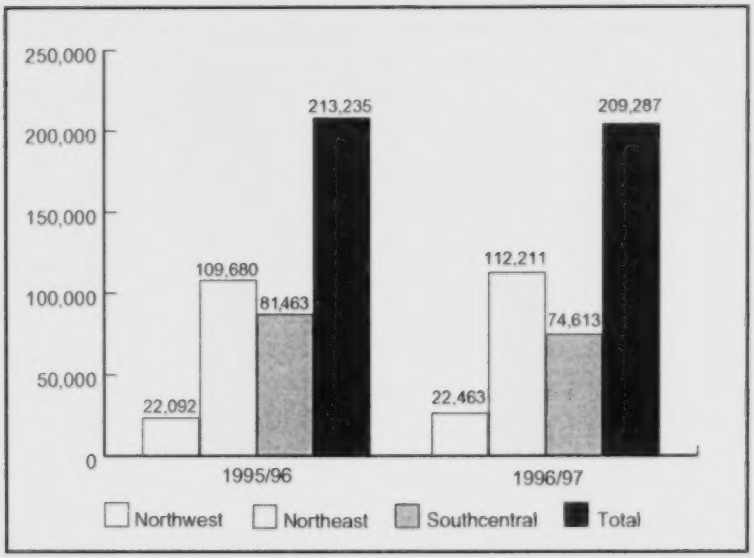



volumes peaked in 1995. The low harvest level reported in 1992 was primarily due to reduced demand for forest products, caused by a recession. Since then, demand for products and harvest levels have rebounded and continue to reflect changing market conditions.

Comparisons of natural and human disturbances to the forest over the past five years are shown in Figures 9 and 10.

**Figure 11**

**Area Harvested (hectares) 1995/96 and 1996/97 by MNR Region**




For 1996/97, the total provincial harvest area of 209,287 hectares is less than a two per cent decrease over the previous year's total. The largest regional harvest area was in Northeast region with a harvest of 112,211 hectares, representing approximately 54 per cent of the total, as shown in Figure 11. MNR's Northwest region had the second largest regional harvested area at 74,613 hectares, 36 per cent of the total. The Southcentral region, which has a much smaller forest area, had the smallest total harvest at 22,463 hectares, 10 per cent of the total. The regional breakdown of harvest changed very little from 1995/96.

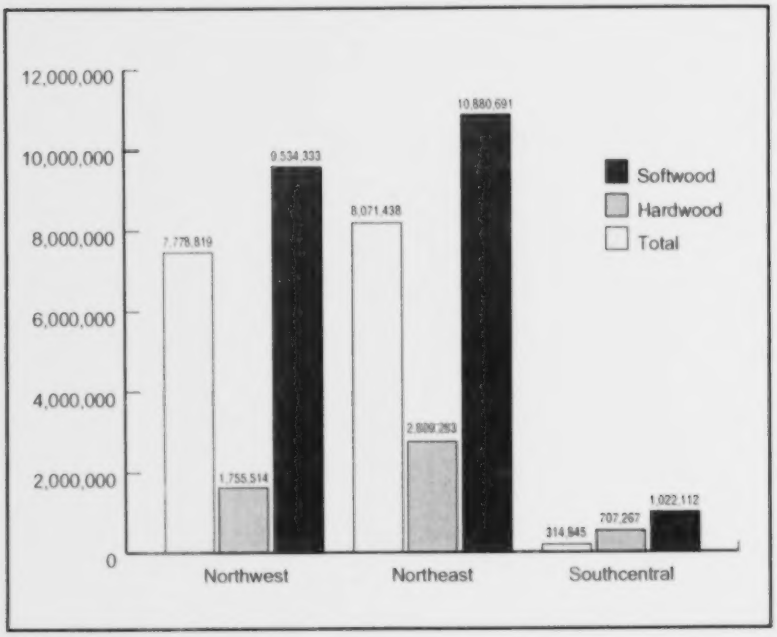



**Figure 12**
**Wood Volume Harvest ($m^3$) by MNR Region and Species Group 1996/97**

Wood volumes harvested in 1995/96 and 1996/97 in MNR's three administrative regions are shown in Figure 12. Total provincial softwood and hardwood volumes harvested in 1995/96 and 1996/97 are shown in Figure 13.

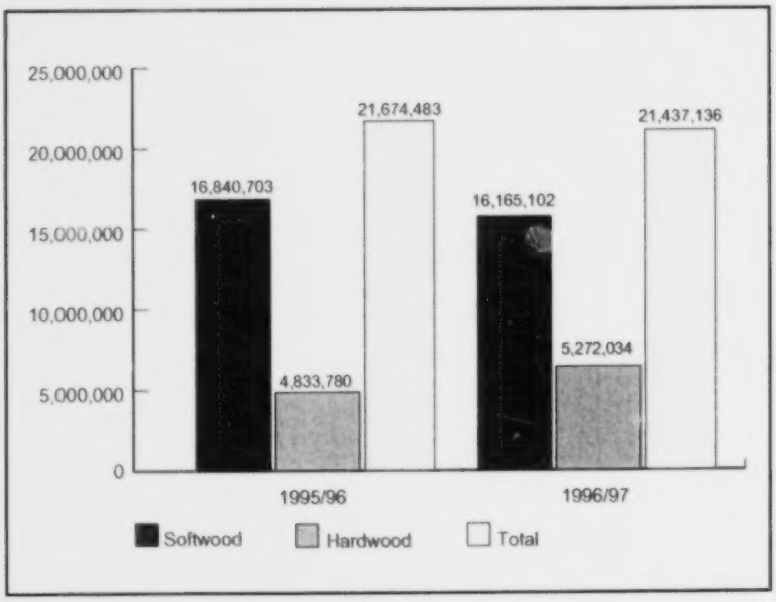



**Figure 13**
**Hardwood and Softwood Volumes Harvested ($m^3$) in 1995/96 and 1996/97**

In 1996/97, the total provincial harvest volume was 21,437,136 cubic metres. The 1996/97 regional total harvest volumes were:

- Northwest region — 9,534,333 cubic metres, or 44 per cent of the total harvest volume
- Northeast region — 10,880,691 cubic metres, or 51 per cent of the total harvest volume
- Southcentral region — 1,022,112 cubic metres, or 5 per cent of the total harvest volume

The greatest demand was for softwood tree species, with these species accounting for 75 per cent of the total harvest volume with a total harvest of 16,165,102 cubic metres. This is a four per cent decrease over the 1995/96 softwood harvest. The 1996/97 regional softwood harvest was:

- Northwest region — 7,778,819 cubic metres;
- Northeast region — 8,071,438 cubic metres;
- Southcentral region — 314,845 cubic metres.

The total provincial hardwood harvest volume of 5,272,034 cubic metres account for 25 per cent of the total harvest volume. This is a nine per cent increase from the 1995/96 hardwood harvest. The 1996/97 regional harvest volumes for hardwoods were:

- Northwest region — 1,755,514 cubic metres;
- Northeast region — 2,809,253 cubic metres;
- Southcentral region — 707,267 cubic metres.

Ontario's forest harvest in 1996/97 was approximately 21 million cubic metres, which represents approximately one per cent decrease over the 1995/96 harvest volume. This decrease is mainly due to decreases in the harvest of jack pine and black spruce tree species. Fluctuations in the harvest volumes of individual tree species from year to year is in large part due to changes in market demand and variations in tree species encountered on the harvested areas. The harvest volume by species for 1995/96 and 1996/97 are shown in Figure 14.

**Figure 14**

**Provincial Harvest Volume ($m^3$) by Species 1995/96 and 1996/97**

| Softwood Species | 1995/96 Harvest | 1996/97 Harvest |
|---|---|---|
| White Pine | 399,449 | 408,440 |
| Red Pine | 233,696 | 202,250 |
| Jack Pine | 6,680,188 | 6,439,813 |
| White Spruce | 18,914 | 22,408 |
| Black Spruce | 8,911,538 | 8,539,415 |
| Hemlock | 12,588 | 9,075 |
| Balsam | 569,311 | 526,122 |
| Cedar | 3,087 | 4,124 |
| Tamarack | 7,602 | 8,536 |
| Other Softwoods | 4,330 | 4,918 |
| Total Softwoods | 16,840,703 | 16,165,102 |

| Hardwood Species | 1995/96 Harvest | 1996/97 Harvest |
|---|---|---|
| Maple | 485,235 | 493,242 |
| Yellow Birch | 48,342 | 41,228 |
| White Birch | 223,259 | 209,387 |
| Oak | 30,491 | 18,638 |
| Beech | 32,747 | 30,280 |
| Poplar | 3,876,163 | 4,399,774 |
| Basswood | 12,601 | 12,999 |
| Ash | 3,910 | 3,680 |
| Other Hardwoods | 121,032 | 62,807 |
| Total Hardwoods | 4,833,780 | 5,272,034 |
| Provincial Totals | 21,674,483 | 21,437,136 |

## Natural Disturbances

Natural disturbances include fire disturbances and damage from insects, disease and severe weather conditions. The intensity of disturbances varies from year to year.

**Forest Fires** The number and size of forest fires varies dramatically from year to year, depending on the weather, as shown in Figure 9. MNR records disturbance due to forest fires across all the forested area of the province and not just for the Area of the Undertaking (AOU); the same is true for harvest depletion. During the period 1992 to 1996, annual fire disturbances peaked in 1995 at more than 590,000 hectares of forest. The

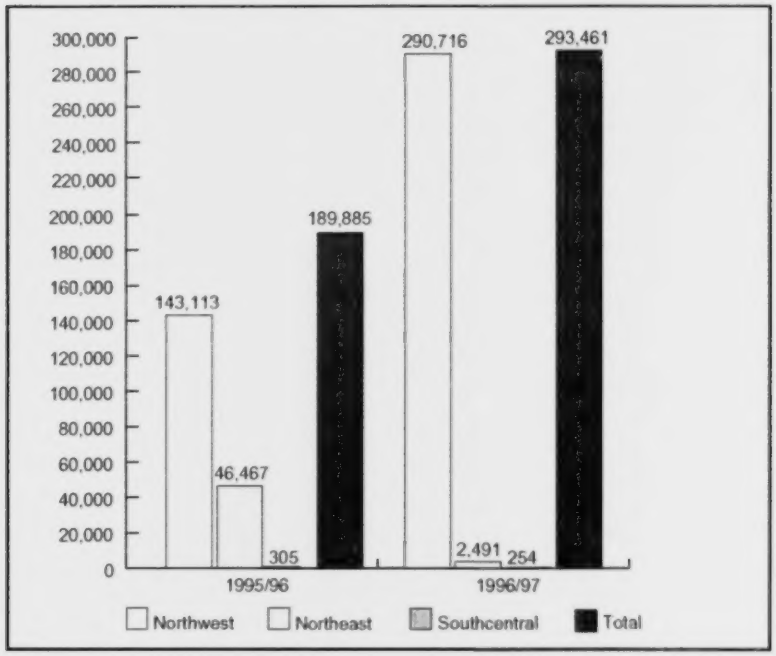
smallest annual area disturbed by fire in that period occurred in 1994 at 80,000 hectares.

Total fire disturbances for 1996/97 within the AOU amounted to 293,461 hectares. This represents about 67 per cent of the total provincial forest area burned that year. The other 33 per cent occurred outside the AOU, mostly in the far north.

Depending on the severity of the damage to trees from fire, it is often possible to conduct salvage operations to harvest killed or damaged trees. Salvage operations are reported as harvesting.

Figure 15 shows the area disturbed by forest fires during 1995/96 and 1996/97 in the AOU by MNR's three administrative regions. Total area burned in 1996/97 increased to 293,461 hectares from 189,885 hectares in 1995/96. Ninety-nine per cent of the area burned within the AOU in 1996/97 was within the Northwest region.

**Figure 15**
**Area (hectares) Disturbed by Forest Fire 1994/95 and 1995/96 by MNR Region**




**Insects, Disease, Severe Weather** Estimates of volume disturbance due to harvest, insects, disease and severe weather from 1992 to 1996 are shown in Figure 10. These estimates pertain to Crown production forest within the AOU only. This figure shows that insect losses were at their lowest in 1990 (7,156,500 cubic metres) and at their highest in 1995

(11,841,300 cubic metres). The magnitude of these losses have not been adjusted to reflect abnormal impacts from that which has always been a part of the natural forest growth and succession.

The volume losses due to tree mortality caused by insects, disease and severe weather (drought, windstorm) shown in Figure 10 are based on studies done for the years 1988 to 1997 by the Forest Health Monitoring Unit of the Canadian Forestry Service and MNR. Mortality and growth losses in surviving trees are included in the estimates. Depending on the severity of damage to trees from insects, disease or wind storm, it is often possible to conduct salvage operations to harvest timber and reduce the threat of forest fires.

The wood volumes estimated to have been lost in 1995/96 and 1996/97 by natural causes are listed below:

| Disturbance Type | 1995/96 Volume Losses | 1996/97 Volume Losses |
|---|---|---|
| Insects | 11,841,300 $m^3$ | 10,686,800 $m^3$ |
| Disease | 5,466,400 $m^3$ | 5,466,400 $m^3$ |
| Severe Weather | 1,840,000 $m^3$ | 5,500 $m^3$ |
| Total | 19,147,700 $m^3$ | 16,158,700 $m^3$ |

**Insect Damage** The damaged area and volume loss caused by the most damaging insects are based on estimates of the forested areas on which 30 per cent or more of the foliage was removed. Usually a number of years in which defoliation occurs is required to kill a tree, and this varies by pest, the tree species being attacked, and other factors. Insects that do significant damage to Ontario forests include the spruce budworm, the jack pine budworm, the forest tent caterpillar, and the gypsy moth. In 1995/96 and 1996/97 the estimated volume losses due to mortality and growth losses for each of these insects are listed below:

| Most Damaging Insects | 1995/96 Volume Loss | 1996/97 Volume Loss |
|---|---|---|
| Spruce Budworm | 11,225,300 $m^3$ | 9,934,900 $m^3$ |
| Jack Pine Budworm | 66,300 $m^3$ | 53,800 $m^3$ |
| Forest Tent Caterpillar | 0 | 251,600 $m^3$ |
| Gypsy Moth | 2,500 $m^3$ | 400 $m^3$ |
| Total | 11,294,100 $m^3$ | 10,240,700 $m^3$ |

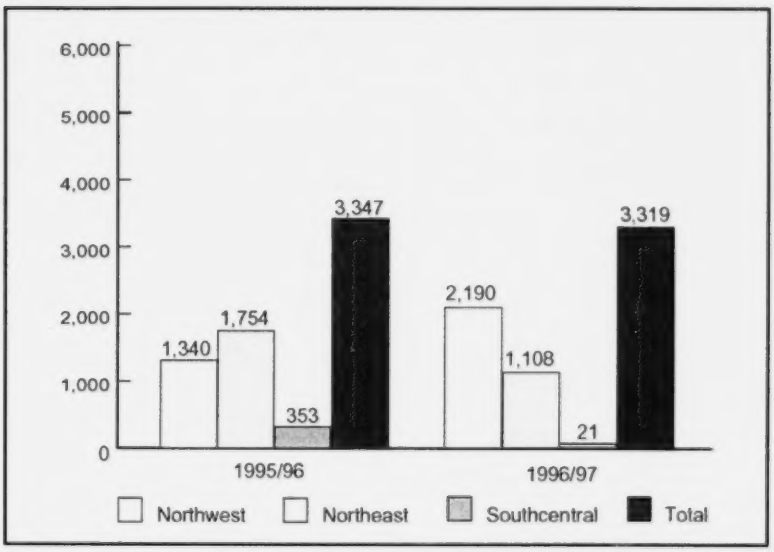
Forested areas may be defoliated by more than one insect. Area reported as defoliated may include different degrees of severity.

**Diseases** Losses due to disease are shown to be a consistent 5,466,400 cubic metres over the period because these losses are normally chronic and are estimated by calculating an annual average loss for all chronic diseases over the period studied (i.e. 1988-1997). The estimate of volume loss due to growth loss and tree mortality caused by chronic disease damage shown in Figure 10 is an annualized average based on estimates of mortality and growth loss caused by root rot, stem decay and foliage dieback.

**Severe Weather** Reported severe weather volume losses from 1992 to 1995 were caused by drought. Weather related volume losses were less than 100,000 cubic metres from 1992 to 1994 and then peaked in 1995 with an annual estimated loss of 1,840,000 cubic metres. The large drought volume losses reported in 1995 occurred in the northern part of North Bay District and the southern part of Nipigon District.

The most common weather disturbances causing significant tree mortality and volume losses are windstorms (damage is commonly referred to as "blowdown") and drought. Windstorms occur periodically but must affect a sizable area in order to be recorded. The area reported as being damaged by windstorms in 1995/96 and 1996/97 are listed in Figure 16 by administrative region. The total area damaged in 1996/97 was about 3,319 hectares, which was a slight decrease from the total of 3,347 hectares reported in 1995/96. These figures were reported by individual management units and are not part of the volume estimates provided by the forest health surveys.

**Figure 16**
**Windstorm Damaged Area (hectares) 1995/96 and 1996/97 by MNR Region**



# Chapter 6

# Forest Renewal and Maintenance

Under the terms of the Crown Forest Sustainability Act (CFSA), forest managers have the responsibility to fully renew the forests where they operate. Forest managers including, Sustainable Forest Licence (SFL) holders are required to ensure that areas harvested are renewed to specific silviculture standards, as established in forest management plans, to ensure the long-term health of Crown forests.

## Renewal

Activities needed to ensure the successful regeneration of all harvested areas are specified in all approved Forest Management plans in Ontario. Crown forests are renewed by both assisted and natural regeneration techniques and these activities are reported annually.

The two most common types of assisted regeneration are planting and seeding. Planting includes planting of bareroot seedlings, container seedlings, or cuttings. Seeding may be done directly from aircraft or by broadcast seeders on the ground. Renewal activities also include preparing an area disturbed by harvest or natural causes for regeneration through mechanical or chemical means or by a prescribed burn. The time period from harvest to completion of the planting or seeding may take up to 5 years and is often referred to as the regeneration establishment period.

Many tree species can naturally re-establish themselves on a site without planting or seeding. These natural mechanisms include seeding from the adjacent forest, suckering of stumps and roots, and growth of young trees remaining on the harvested area. This natural regeneration can be enhanced through the careful selection of the silviculture system and harvest method (see Chapter 5) and commences immediately after harvesting is complete.

In the past, reporting of natural regeneration annually at the time of harvest was not emphasized because some forest mangers preferred to report it periodically after regeneration surveys had been completed. This delay in reporting plus the regeneration establishment period has resulted in the

**Bareroot stock:** a seedling with its roots bare of the initial growing medium at the time of planting.

**Site preparation:** disturbance of the forest floor and upper soil horizons and vegetation to create suitable conditions for artificial regeneration by mechanical or chemical means or by prescribed burning.

**Scarification:** mechanical preparation of a site for natural regeneration.

**Prescribed burn:** the knowledgeable application of fire to a specific land area to accomplish predetermined resource management objectives.

**Cleaning:** a manual, mechanical or chemical operation in a young stand to reduce, eliminate or suppress undesirable competing vegetation. Cleaning promotes growth in desirable trees by removing competing vegetation of similar age that overtop them or are likely to do so.

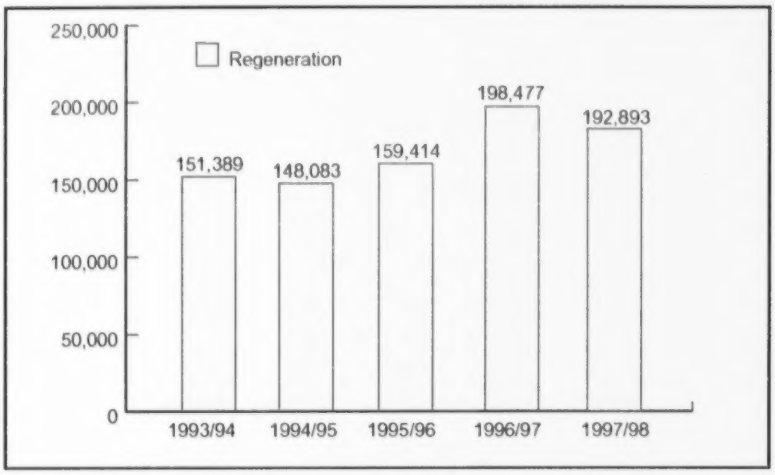



**Figure 17**

**Provincial Forest Regeneration 1993-1997 (hectares)**

reported annual renewal levels being substantially less than the reported annual harvest levels. In 1996, new reporting procedures came into effect that require natural regeneration to be reported promptly upon completion of the harvest.

Reported levels of regeneration (i.e. natural regeneration and assisted regeneration) over the years 1993 to 1997 are shown in Figure 17. Regeneration levels tend to follow fluctuations in harvest and, to a lesser degree, forest depletions from natural causes such as forest fires and insect epidemics. Harvesting steadily increased from 1992 to 1995 and declined slightly in 1996 as shown in Figure 9. Regeneration levels declined from 1993 to 1994, reached their maximum in 1996 and then declined slightly in 1997.

Comparison of reported harvest and regeneration levels on an annual basis is not appropriate because of the previously mentioned regeneration establishment period and the reporting delay. Comparison of average harvest and regeneration levels over a 5-year period is more appropriate but will require several years before the new reporting requirements take effect. The average total provincial harvest area over the 5-year period from 1992 to 1996 is approximately 206 thousand ha. The average total provincial regeneration level over the 5 year period from 1993 to 1997 is approximately 170 thousand hectares, or about 17% less than the average harvest level. The more complete reporting requirements should result in regeneration levels growing closer to the harvest levels over the next few years.

| REGENERATION | Northwest | Northeast | Southcentral | Province |
|---|---|---|---|---|
| **UNEVEN-AGED MANAGEMENT (hectares)** | | | | |
| Selection cut | 0 | 7,992 | 9,824 | 17,816 |
| Total uneven-aged management | 0 | 7,992 | 9,824 | 17,816 |
| **EVEN-AGED MANAGEMENT** | | | | |
| Natural regeneration (hectares) | | | | |
| Clear cut | 8,607 | 43,918 | 1,484 | 54,009 |
| Strip cut | 1,760 | 115 | 10 | 1,885 |
| Seed tree cut | 147 | 3,620 | 20 | 3,787 |
| Uniform shelterwood cut | 2 | 12,384 | 5,043 | 17,429 |
| Subtotal natural regeneration | 10,516 | 60,037 | 6,557 | 77,110 |
| Assisted (artificial) regeneration | | | | |
| Planting (hectares) | 38,282 | 34,815 | 810 | 73,907 |
| Trees(000's) | | | | |
| Bareroot | 8,040 | 6,556 | 81 | 14,677 |
| Container | 51,346 | 41,979 | 685 | 94,010 |
| Cuttings | 0 | 0 | 0 | 0 |
| Seeding (hectares) | | | | |
| Direct | 13,577 | 4,750 | 635 | 18,962 |
| With site preparation | 2,903 | 1,073 | 5 | 3,981 |
| Scarification (hectares) | 16 | 29 | 1,072 | 1,117 |
| Subtotal Assisted Regeneration (hectares) | 54,778 | 40,667 | 2,522 | 97,967 |
| **TOTAL REGENERATION (hectares)** | **65,294** | **108,696** | **18,903** | **192,893** |
| **SITE PREPARATION (hectares)** | | | | |
| Mechanical | 44,948 | 35,903 | 1,197 | 82,048 |
| Chemical | 4,899 | 5,081 | 317 | 10,297 |
| Prescribed burn | 833 | 27 | 0 | 860 |
| **TOTAL SITE PREPARATION (hectares)** | **50,680** | **41,011** | **1,514** | **93,205** |
| **TOTAL RENEWAL ACTIVITIES (hectares)** | **115,974** | **149,707** | **20,417** | **286,098** |

**Figure 18**

**Provincial Renewal Operations 1997/98**

**Improvement cutting:** the elimination or suppression of less valuable trees in favour of more valuable trees, typically in a mixed, uneven-aged forest.

**Thinning:** a cutting made in an immature stand to accelerate growth of the trees left uncut. The goal is to foster quality growth, improve composition and promote sanitation.

**Commercial thinning:** removing trees from a developing young stand, so that the remaining trees will have more growing space, dead and dying trees will be salvaged, and the operation will make a net profit.

**Pruning:** the removal of live or dead branches from a standing tree.

Renewal Charge Rates:

**April 1, 1997 to March 31, 1998**

**White and red pine:**
**$11.00 per cubic metre**

**All other conifers:**
**$6.00 per cubic metre**

**Poplar and white birch:**
**$0.50 per cubic metre**

**Grade 1 Hardwoods:**
**$8.00 per cubic metre**

**Grade 2 Hardwoods:**
**$1.50 per cubic metre**

Figure 18 summarizes the renewal operations conducted on Crown land in 1997/98 for the province and for each MNR region. The area renewed in 1997/98 includes areas harvested and areas burned in 1996/97 and earlier.

## Tending and Protection

Forest tending operations are carried out to improve the survival, growth or quality of a regenerating forest. Tending may be done in young stands to help attain free-growing status. Tending may also be conducted in uneven-aged stands to maintain the desired age-class distribution and volume.

Protection operations prevent or manage the damage caused by insects and diseases.

Figure 19 summarizes the tending and protection activities conducted on Crown land in 1997/98 for the province and for each MNR region. Reported levels of tending are up 6 per cent from the previous period.

**Figure 19 Provincial Tending and Protection Activities 1997/98 (hectares)**

| TENDING | Northwest | Northeast | Southcentral | Province |
|---|---|---|---|---|
| Cleaning | | | | |
| Manual | 313 | 1,154 | 1,454 | 2,921 |
| Chemical — ground | 2,747 | 1,210 | 537 | 4,494 |
| Chemical — aerial | 31,063 | 41,986 | 499 | 73,548 |
| Mechanical | 32 | 0 | 0 | 32 |
| Spacing, Precommercial Thinning, Improvement Cutting | | | | |
| Even-aged | 7,117 | 2,082 | 3,406 | 12,605 |
| Uneven-aged | 0 | 33 | 7,723 | 7,756 |
| **TOTAL TENDING** | 41,272 | 46,465 | 13,619 | 101,356 |

| PROTECTION (hectares) | | | | |
|---|---|---|---|---|
| Accelerated Harvest | 0 | 0 | 0 | 0 |
| Salvage | 0 | 0 | 0 | 0 |
| Manual Protection | 0 | 0 | 0 | 0 |
| Ground Insecticide | 0 | 0 | 10 | 10 |
| Aerial Insecticide | 0 | 0 | 27 | 27 |
| **TOTAL PROTECTION** | 0 | 0 | 37 | 37 |

## Funding for Forest Renewal

The financial mechanisms established under the CFSA and outlined in Chapter 4 ensure that there will always be funding available for forest renewal.

Through Crown charges, the Crown collects from each company with a Sustainable Forest Licence, the appropriate level of renewal charges which are placed in an account in the Forest Renewal Trust fund. Funds in the renewal trust may only be used to conduct eligible silviculture work on the specific licence area harvested to generate the funds.

Licensees with a Forest Resource Licence who do not operate on an SFL pay their renewal charges into a Forest Renewal Special Purpose Account. This account provides dedicated funding for forest renewal on management units where harvesting and other operations are conducted on Crown land by companies that do not hold Sustainable Forest Licences.

MNR is responsible for the administration of the Forest Renewal Special Purpose Account. As with the Forest Renewal Trust fund, each forest or management unit has its own separate account to cover forest renewal costs.

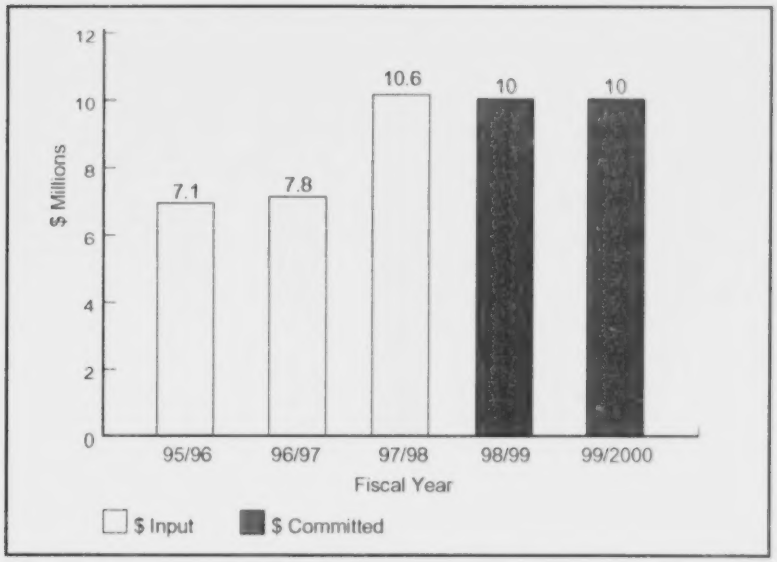
In 1997 money for a second trust fund, the Forestry Futures Trust, came from a portion of the area charges that all licensees paid to the Crown. In addition, any administrative penalties assessed under the CFSA are paid into the Forestry Futures Trust.

The Forestry Futures Trust, managed by an independent committee established by the Crown, funds projects that meet MNR approved criteria. To qualify, projects must be a silvicultural activity on Crown land that addresses renewal of trees killed or damaged by fire; renewal of land where a licensee becomes insolvent; forest protection from insect or disease infestation; or intensive stand management related to a critical wood supply.

The annual contributions to the Forestry Futures Trust are summarized in Figure 20. The amounts shown through 1997/98 are actual values and the amounts shown after are predictions based on commitments.

In addition to the trust funds and Special Purpose accounts, money was directed from the provincial treasury to MNR supported forest renewal through operation of nurseries and the Ontario Tree Seed Plant, and tree improvement operations.

**Figure 20**
**Forestry Futures Fund: Annual Funds Input or Committed as of April 1, 1998**




Total forest renewal expenditures in 1997/98 were $99.7 million. Sources of these expenditures were:

- Direct MNR expenditures – $7.7 million;
- Forest Renewal Trust Fund – $68.2 million;
- Forestry Futures Trust Fund – $8.8 million;
- Special Purpose Account – $15.0 million.

Note that transition funding is not included.

# *Chapter 7*

# Forest Access

Most forest access roads on Crown land are planned, constructed and paid for by the forest industry. The forest management plan for each management unit describes the location, construction, maintenance and use management of access roads that exist or are to be constructed. These roads are essential for carrying out forest management activities. They also provide public access to provincial Crown land for tourism, outdoor recreation, mining and other activities.

This report provides information on the construction of primary and secondary forest access roads. It provides information on road maintenance activities, which include grading, snow plowing, realignments, flood repairs, bridge repairs and any other activity necessary to maintain existing roads. This chapter also reports on controlling access to roads, implementation of abandonment measures and how this work was funded.

## Road Construction and Maintenance

Figure 21 shows total provincial road construction in kilometres in 1997/98 for primary and secondary forest access roads in each MNR region.

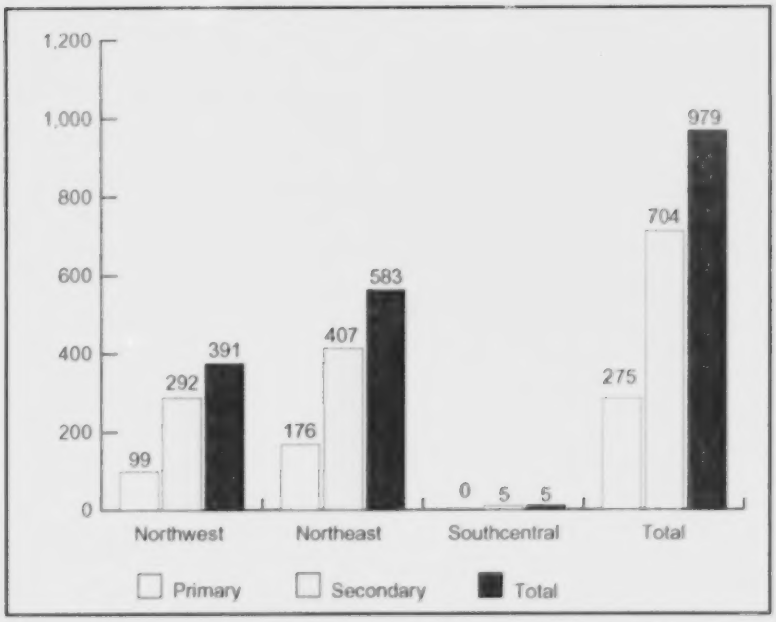
**ROAD CLASSES**

**Primary Roads**
**Essentially permanent roads, regularly maintained with a life expectancy in excess of 15 years.**

**Secondary Roads**
**Essentially branches off primary roads. They are not considered permanent and are not normally maintained beyond their 5 to 15 year period of use.**

**Tertiary Roads**
**Built for short-term use (i.e. up to five years). They are not maintained beyond their period of use.**

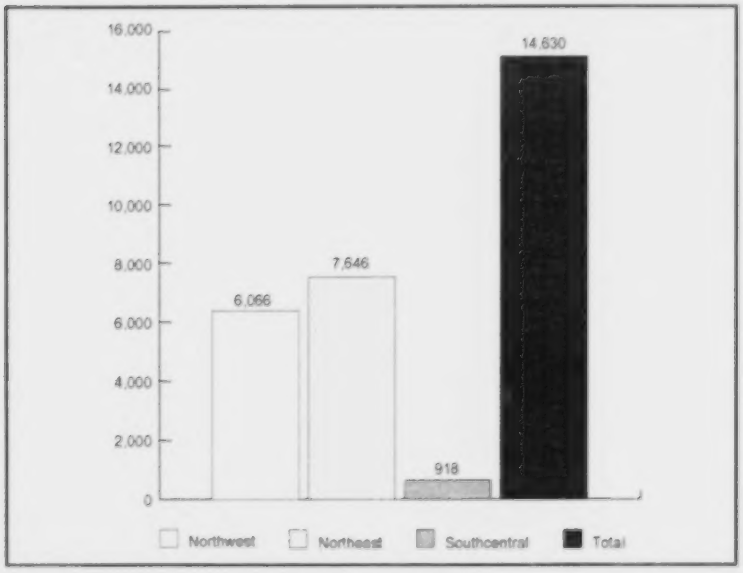
**Figure 21**
**Road Construction (kilometres) 1997/98 by Road Class and MNR Region**




Total road construction for 1997/98 amounted to approximately 979 kilometres which is about a 10 per cent decrease from the 1996/97 construction total of 1,088 kilometres. There were 275 kilometres of primary roads constructed in the province, and 704 kilometres of secondary roads.

Figure 22 shows total provincial road maintenance in kilometres in 1997/98 for each MNR region.

**Figure 22**
**Road Maintenance (kilometres) 1997/98 by MNR Region**



Total road maintenance for the year was carried out on approximately 14,630 kilometres of primary and secondary roads which is about a 24 percent increase in the 1996/97 total of 11,764 kilometres.

In 1997/98 the forest access road program funded by MNR constructed, reconstructed and maintained over 200 kilometres of forest access roads in Northern Ontario at a cost of $1.3 million. Most of the roads funded under MNR's program serve many purposes including public access and forestry.

## Road Abandonment and Access Control

Both the abandonment of access roads once their intended use is fulfilled and restrictions on road usage must be planned in advance of construction and documented in the forest management plan for each management unit. These activities must also be reported in the management unit annual report.

Figure 23 shows the total length, in kilometres, of primary and secondary roads that were abandoned for each MNR region in 1997/98. In total, 1,992 kilometres of road were abandoned. This total was made up of 1,390 kilometres in the Northwest region, 359 kilometres in Northeast region, and 243 kilometres in the Southcentral region. The method of abandonment for the majority of these roads was natural abandonment.

For reasons of public safety and/or resource management, access roads may be closed temporarily, seasonally or on a permanent basis. Methods used to control access can generally be classified into two categories: erecting signs to advise the public of the restriction (referred to as "signage"); or erecting gates or using other physical means such as ditching (referred to as "gated" or "physical barrier").

Figure 24 shows the amounts, in kilometres of primary and secondary roadway to which access was controlled during 1997/98, broken down by MNR region and the method. A total of about 2,388 kilometres of road had access controls, consisting of 993 kilometres in the Northwest region, 728 kilometres in the Northeast region and 667 kilometres in the Southcentral region. Provincially, access was restricted on 491 kilometres of road by gating and on 110 kilometres of road by signage. Another 1,787 kilometres of road had access control through unspecified means. This is shown as the "other" category in Figure 24.

**Access Control:** The closure of a road to public travel or the restricted access to a road for certain specified uses for given periods of time.

**Road Abandonment:** The use management strategy adopted when a road has fulfilled its original use and is no longer required, or when maintenance cannot be justified.

**Natural Abandonment:** The natural degradation of a road when it is not maintained. Road maintenance has ceased and steps are not taken to prevent the use of the road by vehicular traffic through means of physical disablement.

**Physical Abandonment:** A deliberate act to render a road unusable by vehicular traffic. For example: gating, ditching, bridge or culvert removal, etc.

**Figure 23**
**Road Abandonment (kilometres) 1997/98 by Road Class and MNR Region**

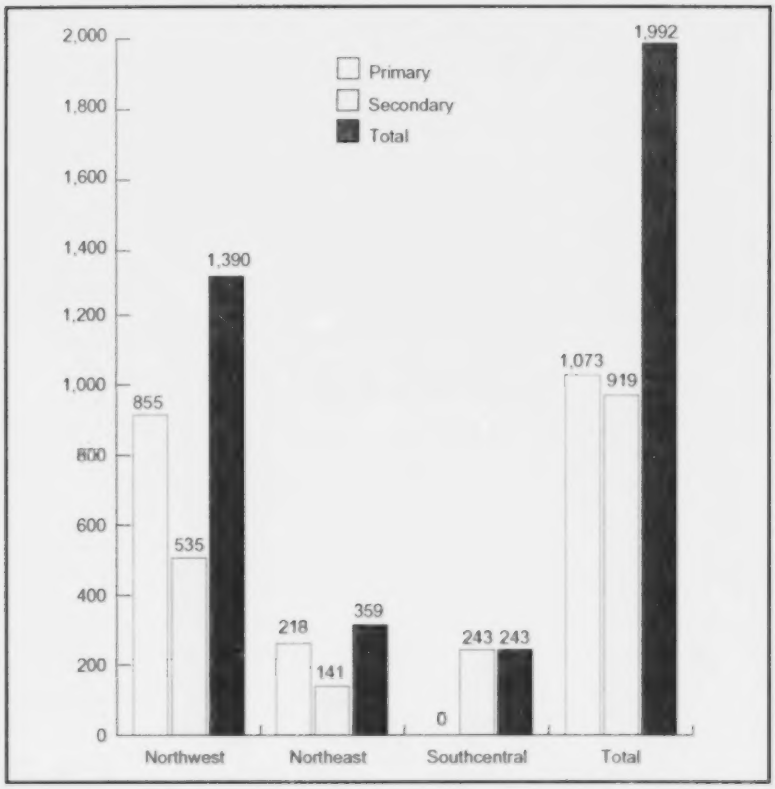
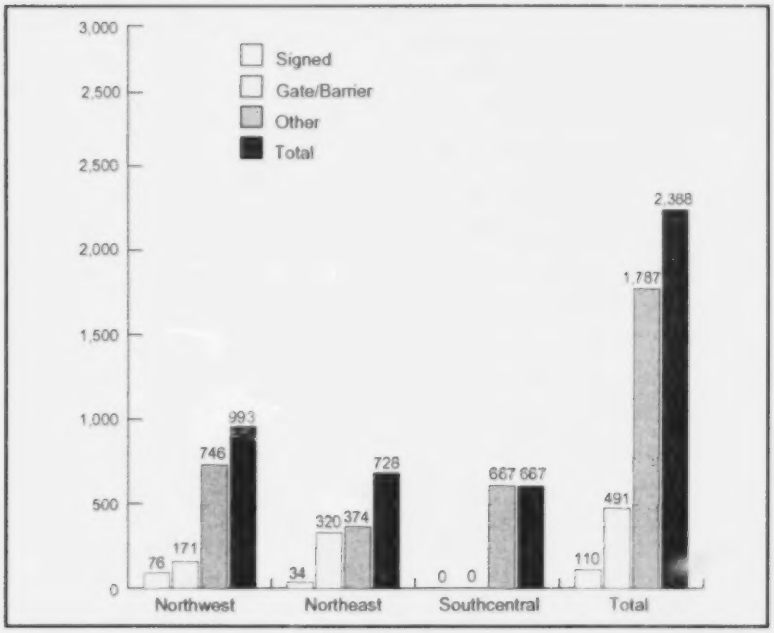



**Figure 24**
**Road Access Control (kilometres) 1997/98 by Control Method and MNR Region**



# Chapter 8

# Monitoring and Compliance

Forest operations in Ontario are monitored and audited to assess compliance and to evaluate progress and results. There are three types of monitoring: effectiveness, effects and compliance. The information collected and analyzed for effectiveness monitoring determines how well the forest is growing. Effects monitoring assesses the impacts of operations on various aspects of the forest ecosystem through long term studies. Compliance monitoring is conducted to ensure that MNR and forest industry carry out operations according to plans, regulations and the required standards. Operations are also audited through Independent Forest Audits, providing an independent published audit of management units across the province.

## Forest Auditing

The Independent Forest Audits are a requirement of the Crown Forest Sustainability Act (FSA), Term and Condition #86 of the Timber Class Environmental Assessment (EA) Decision, and are a condition of the Sustainable Forest Licenses (SFL). All management units, both Crown and SFL, are audited at least once every five years to review actual operations and examine the forest management activities carried out over the previous five years.

The audit is a systematic and documented verification process to assess adherence to the forest management plan and the planning process. Assessing the interpretation and application of provincial policies, manuals, and guidelines at the management unit level, is also part of the audit. Auditors examine the effectiveness in achieving the planned objectives and provide an assessment of forest sustainability for the management unit. Audit teams review licence compliance with the obligations of their specific Sustainable Forest Licence.

In order to address the audit purpose and objectives, the audit process and protocol document sets out the forest management principles, criteria and procedures for undertaking independent forest audits. The audit protocol

identifies eight guiding principles: Commitment, Public Participation, Forest Management Planning, Plan Implementation, System Support, Monitoring, Achievement of Management Objectives and Forest Sustainability and Contractual Compliance. For each principle, a series of specific criteria is identified that, if met, will result in the principle being achieved.

The terms of reference are the same for all Independent Forest Audits, including the audit team personnel requirements. Each audit team consists of a lead auditor who is trained in auditing procedures and has current auditing experience; a minimum of two foresters with experience in forest management planning and forest operations; and an individual trained in forest ecology or wildlife management. All members of an audit team must have a minimum of seven years of recent and relevant experience in similar forest types, and must be independent of the operations they audit as well as free from conflict of interest throughout the process. The audit team must include a Registered Professional Forester. For the 1997 audits, the audit team was required to provide an audit against the requirements that were in effect during the audit period and prepare the subsequent report for publication.

Action plans must be developed for each audit report. The licensee and the MNR District responsible for the management unit jointly develop the action plan. For each recommendation in the audit report, the action plan must state the action required, the organization responsible for the work, deadline dates and a method of tracking the progress of the action plan. A status report of the action plan is also required two years after acceptance of the audit report to ensure that progress, as stated in the action plan, is occurring. The Independent Forest Audit reports are published and are available upon request.

In 1997, Independent Forest Audits were conducted on seven SFLs, namely the Pineland, Superior, Romeo Malette, Nagagami, Highrock, Lac Seul and Hearst Forests. In all cases the auditors recommended or were in support of licence renewal. There were also three audits of non-SFL: Algonquin Park, Mississagi, and Sapawe. The auditors have indicated that each Forest was managed in compliance in all material aspects with the audit protocol criteria, except for those matters that they have identified in their audit reports as needing improvement.

The audit report of the **Algonquin Park Management Unit**, managed by the Algonquin Forestry Authority (AFA), indicated that the unit is very well managed and that this is consistent with the expectations placed on

the AFA for management of this unit. This audit examined activities over a seven-year period ending March 31, 1997. This audit report identified 14 recommendations. The recommendation of concern on this unit relates to a Local Citizens' Committee (LCC) not being in place at that time. The majority of the other recommendations relate to improvements to operational procedures and practices. The action plan prepared by the AFA and the MNR demonstrates that these issues are being addressed. Extension of the agreement is recommended. MNR signed a new SFL-like agreement with the AFA in November 1997.

The audit report of the **Hearst Forest**, managed by Hearst Forest Management Inc., indicated that the forest is managed in compliance, in all material respects, with the audit criteria outlined in the audit protocol during the five-year period ending March 31, 1997. This audit report identified 13 recommendations. These recommendations have been summarized into the following main areas: integrating the needs of First Nations, poplar utilization, water crossings and information management. Ongoing land use issues have created challenges in the relationship between Aboriginal and non-Aboriginal peoples. Poplar is not being well utilized primarily due to the lack of a market for poplar pulp. There were instances on the Forest where water crossings on roads abandoned prior to the management period being audited were in disrepair. Also, information management and record keeping require improvement. The portion of the Forest which is recorded as being "barren and scattered", or "not sufficiently regenerated" is large on this Unit (15 per cent of productive forest). This appears to be related to the fact that MNR has not completed the assessments, rather than to silvicultural efforts. Licence extension was recommended.

The audit report of the **Highrock Forest**, managed by Abitibi-Consolidated Inc., indicated that the Forest is managed to an exceedingly high standard and is in compliance with all legislative and contractual requirements for the five-year period ending March 31, 1997. This audit report identified three recommendations, one of which was licence extension. The other two recommendations dealt with the need to improve the effectiveness of slash pile disposal and the need to determine the effectiveness of strip shelterwood management of white pine.

The audit report of the **Lac Seul Forest**, managed by McKenzie Forest Products Inc., indicated that the forest is managed to a high standard and is in compliance with all legislative and contractual requirements for the five-year period ending March 31, 1997. This audit report identified six

recommendations. The recommendations that were identified for this Forest relate to amendment documentation, Local Citizens' Committee (LCC) effectiveness and water crossings. Additional documentation of public consultation activities needs to be included with Forest Management Plan amendment records. The audit team indicated that an increased understanding of forest management, improved information-presentation materials and better meetings would improve LCC effectiveness. The company needs to take greater care when locating intermittent stream reserves and stream crossings, and must continue to take steps to ensure that culverts are installed properly. By way of their action plan, the Company and the MNR appear to have these issues well in hand. Following the 1992 Forest Management Agreement Review on this forest, the licence was not renewed. Licence renewal is now recommended.

The audit report of the **Mississagi Management Unit** indicated that with the exceptions noted in the report, the forest management activities conformed to existing policies and legislation in force during the seven-year period ending March 31, 1997. This audit report identified 18 recommendations. The recommendations on this Unit fell into two main categories: those resulting from poor data management and collection practices, and those resulting from the fact that the Unit was being audited during a transition. This Unit was experiencing large-scale restructuring and was being transferred from Crown management responsibility to management under a Sustainable Forest Licence (SFL). The future SFL holder and MNR are taking a proactive approach to dealing with these issues as outlined in their action plan.

The audit report of the **Nagagami Forest**, managed by Donahue Forest Products Inc., indicated that the forest is managed in compliance, in all material respects, with the audit criteria outlined in the audit protocol during the five-year period ending March 31, 1997. This audit report identified seven recommendations. These recommendations have been summarized into the following main areas: the Company should enhance its sustainable forest policy and communicate it to external parties; the Company needs to take steps to recover productive forest area currently occupied by slash piles; culverts need to be properly installed and maintained; actual harvest needs to increase to at least 90 per cent of planned harvest; finally, accurate annual reporting, as well as reporting of natural regeneration and free-to-grow data needs to improve. Trend analysis completed by the forest manager identifies potential sawlog shortages on this Forest within the next 20 years. More detailed analysis has been done for the 1997 Forest Management Plan (FMP). Licence extension was recommended.

The audit report of the **Pineland Forest**, managed by the Pineland Timber Company Limited, indicated that the forest is managed in compliance, in all material respects, with the audit criteria outlined in the audit protocol during the five-year period ending March 31, 1997. This audit report identified 13 recommendations. Five of the recommendations dealt with negotiations related to the Kinogama Exclusion Request. This resulted from a request by remote tourist outfitters for suspension of forest operations in a large area. The issue was not yet resolved, but the District intends to resume discussions prior to the next FMP. The remaining recommendations have been summarized into the following main areas: MNR needs to ensure that gaps in fish and wildlife data are addressed; slash accumulations need to be eliminated; water crossings built by overlapping licensees must be up to the required standards; MNR and the company should develop a strategy to address the maintenance and abandonment of old roads; the company should continue to monitor and modify silvicultural practices accordingly. Licence extension was recommended.

The audit report of **Romeo Malette Forest**, managed by Malette Inc., indicated that the forest was well managed during the five years ending March 31, 1997. They did note, however, that there are several areas in which management could be improved, to help ensure the long-term sustainability of the forest. This audit report identified 19 recommendations. These recommendations have been summarized into the following main areas: inventory management, compliance management, documentation and record keeping. The company should improve their inventory management system and complete their free-to-grow surveys in a timely fashion using a consistent and accurate methodology. Response to previous audit recommendations was limited, therefore this audit recommends that the Company should respond to audit recommendations with a timely and detailed set of actions. Pine volumes are declining on the unit and therefore the development and implementation of a comprehensive pine management strategy is recommended. The company committed a number of infractions during the audit period and needs to develop a compliance management system that tracks compliance reports and develops strategies to address compliance problems. Documentation and record keeping associated with forest management should also be improved. Licence extension was recommended.

The audit report of the **Sapawe Management Unit** indicated that the unit is managed in general compliance with all legislative requirements during the five-year period ending March 31, 1997, but that deficiencies in staffing and funding during a period of intensive organizational change

has caused management and administration problems. This audit report identified six recommendations. The major concerns on this unit related to collection and management of information. Collection of free-to-grow data; the development of information systems that allow the efficient retrieval of information; and documentation of amendment-related changes to the FMP were identified as areas needing improvement. The audit report does not make a recommendation related to human resources requirements, but the underlying concerns related to this issue are identified in a suggestion.

The audit report of the **Superior Forest**, managed by Superior Forest Management Ltd., indicated that the forest is managed in compliance, in all material respects, with the forest management criteria outlined during the five-year period ending March 31, 1997. This audit report identified 14 recommendations. These recommendations have been summarized into the following main areas: forest management planning, compliance, inventory information for timber and non-timber values, review of silvicultural ground rules and water crossings. The auditor noted both a need for an improved compliance record to avoid infractions and improved operational planning to avoid numerous FMP amendments. Silvicultural ground rules should be reviewed in relation to the use of strip cutting on selected lowland areas and natural regeneration systems should be supplemented on upland mixed wood sites by planting spruce or pine. The inventory management system needs to be improved and related issues involving accuracy of volume estimates should be improved. MNR should take the lead in ensuring the important gaps in fish and wildlife data are filled. MNR and the company should reconcile annual report figures shortly after submission, and final approval should occur within 60 days. MNR should submit the Megasin Lake EA to the Ministry of Environment and both ministries should work towards resolution. Licence extension was recommended.

## Compliance Monitoring

Compliance monitoring is designed to ensure that MNR and forest industry carry out operations according to plans and operational standards. At the management unit level, MNR prepares a report of the forest operations inspections. These reports assist in focusing on any activities that may require further attention.

MNR has been solely responsible for forest compliance monitoring in the past. In 1996/97 changes to forest compliance monitoring were proposed that permitted MNR to meet the requirements of CFSA and Term and

Condition #78 of the Class Environmental Assessment on Timber Management, while increasing the roles and responsibilities of forest industry.

In November, 1996, seven forest companies, along with their MNR District counterparts, worked with the provincial compliance team to mutually test, operationalize and make amendments to the compliance planning, inspection, monitoring and reporting systems. These seven case studies continued into 1997/98, to help refine the system and to prepare for province-wide implementation in April, 1998.

In 1997/98 a total of 2,939 forest operations inspection reports were submitted by fifty-nine reporting management units. These reports contain the results of MNR forest operations inspections and industry-conducted compliance inspections from the seven case-study management units.

A total of 35 infractions resulted in penalties being assessed. There were 33 penalties relating to harvesting operations, one penalty related to renewal operations and one penalty associated with forest access operations.

Penalties include those made through the CFSA or other legislation (e.g. the Public Lands Act), as appropriate. Penalties also include "stop work orders", "repair orders" or "compliance orders" which are directed at preventing, stopping and repairing damage.

Compliance inspections of road water crossings conducted during 1997/98 recorded 34 washouts. Washouts can occur due to a number of factors, including natural causes such as flooding, and blockage due to beaver activity and poor road construction techniques.

## Effectiveness Monitoring

Harvesting and renewal activities are reported annually at the time they are implemented. Determination of the success of these activities in regenerating the forest is done by specific assessment methods, which are conducted a number of years (i.e. usually from 5 to 15 years) after regeneration treatments are completed. Free-to-grow assessments are an effectiveness monitoring tool that provides an indication of success of the silviculture treatments and provides information to project the future forest condition. These assessments involve a variety of techniques including field measurement of trees on sample areas of the forest, aerial surveys and remote sensing. Some forest managers conduct these surveys annually while others prefer to accumulate larger blocks that they assess once every few years. This has resulted in a backlog of areas needing assessment. The Forest Renewal Trust Fund now provides funding for these surveys on Sustainable Forest Licence areas and many forest companies

are now assessing their regularly scheduled regeneration areas as well as the backlog areas

Figure 25 summarizes the areas assessed and those that were declared free to grow for 1997/98 by region for the thirty-seven management units that reported. Of the total area assessed for free-to-grow, 81% was approved as having achieved the free-to-grow standard within a set time period. This varies by region, from 76% in the Northwest Region and, 84% in the Northeast Region, to 67% in the Southcentral Region.

Some of the areas found not to be classified as free to grow at this time, will require retreatment, some will require tending (i.e. suppress undesirable competing vegetation such as brush and grass), while others will simply require an additional passage of time to allow for additional growth needed to meet the height standard for success. All harvested areas are required to be renewed successfully.

## Effects Monitoring

Effects monitoring is a long-term assessment of potential forest management impacts on the forest ecosystem. The summary of research activities and scientific studies for 1997/98 pertaining to forest operations and practices is presented in Chapter 10. As part of MNR's adaptive management practices, the results are used to update existing guidelines and policies and to prepare new ones.

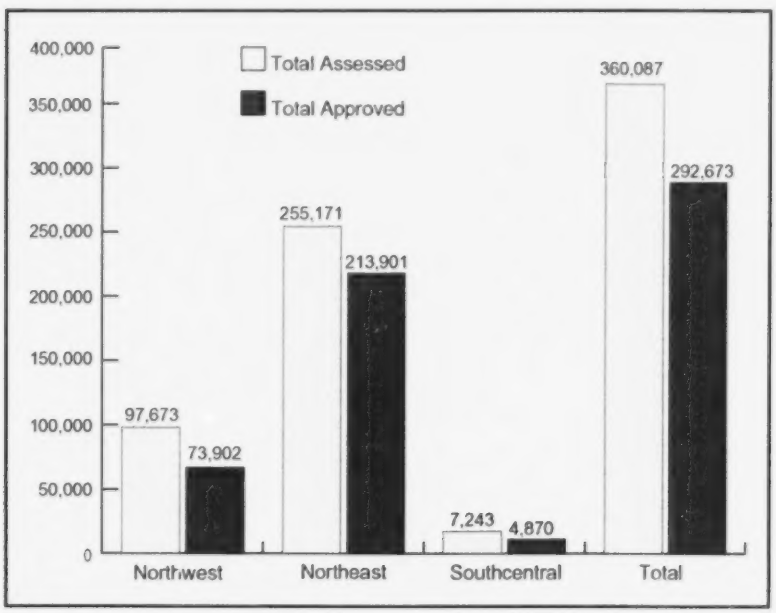



**Figure 25**
**Summary of Area (hectares) Declared Free-To-Grow, by MNR Region, 1997/98**

# Chapter 9

## Implementation of Term and Condition #77

Term and Condition number 77 (T&C #77), of the Class Environmental Assessment for Timber Management on Crown Lands decision requires the Ministry of Natural Resources (MNR) to negotiate with Aboriginal peoples at the local level regarding opportunities for a more equal participation in the benefits of forest management. In referring to Aboriginal peoples, the decision includes communities, individuals, enterprises and organizations.

The wording of T&C #77 is as follows:

> *During the term of this approval, MNR District managers shall conduct negotiations at the local level with Aboriginal peoples whose communities are situated in a management unit, in order to identify and implement ways of achieving a more equal participation by Aboriginal peoples in the benefits provided through timber management planning. These negotiations will include but are not limited to the following matters:*
>
> *a) Providing job opportunities and income associated with bush and mill operations in the vicinity of Aboriginal communities.*
>
> *b) Supplying wood to wood processing facilities such as sawmills in Aboriginal communities.*
>
> *c) Facilitation of Aboriginal third party licence negotiations with existing licensees where opportunities exist.*
>
> *d) Providing timber licences to Aboriginal people where unalienated Crown timber exists close to reserves.*
>
> *e) Development of programs to provide jobs, training and income for Aboriginal people in timber management operations through joint projects with the Department of Indian and Northern Affairs.*
>
> *f) Other forest resources that may be affected by timber management or which can be addressed in the timber management planning process as provided for in Condition 23(c).*

## Implementation

The scope of T&C #77 is broad, and its application and implementation are determined by variables at the local level. The arrangements and agreements that are effected by MNR District managers and Aboriginal communities take different forms, in an effort to accommodate to the extent possible the unique needs, capacities and situations of individual Aboriginal communities in the context of available opportunities.

The implementation of T&C #77 may include the involvement of individual Aboriginal communities, or groups of communities with common interests that are situated in a common geographic area. Linkages with Tribal Councils and regional organization representatives are taken into consideration and encouraged.

In its decision, the Environmental Assessment (EA) Board ordered MNR to build upon initiatives it was already pursuing and to provide new opportunities for Aboriginal peoples that will enable them to benefit from forest management activities in their locales.

In January 1996, MNR released draft "Implementation Guidelines for Term and Condition #77 of the Class Environmental Assessment." The purpose of these guidelines is:

- to provide MNR District Managers with a consistent framework for the implementation of T&C #77 that builds upon existing initiatives and facilitates the development of new initiatives;
- to provide Aboriginal communities and forest industry companies with the information MNR District managers will use in the implementation of T&C #77.

MNR implements T&C #77 consistent with the Crown Forest Sustainability Act (CFSA), which provides MNR's legislative authority for the sustainable management and use of forest resources. The CFSA has enabled MNR to put mechanisms in place that may assist in facilitating the implementation of T&C #77.

While responsibility for implementation of T&C #77 rests with MNR, the EA Board recognized that the involvement of other parties would be critical to successful implementation. Such involvement would include the participation of First Nations and other Aboriginal communities, the forest industry, and other government bodies (e.g., Ontario ministries, Department of Indian and Northern Affairs Canada, Natural Resources Canada).

Aboriginal participation in forest management and economic development activities are summarized under four categories:

## Access to Resources

First Nations are often in a position to operate as forest harvesters. Although Ontario's wood supply is almost completely allocated to Sustainable Forest Licence (SFL) holders, MNR has helped the industry and Aboriginal communities negotiate types of access. For example, overlapping licences have been issued to First Nations.

In other examples, First Nations have "first opportunity" to buy in as independent operators when opportunities arise. The industry has been innovative and willing to consider a variety of means for First Nations to increase their access to forest resources.

## Role in Planning and Management

Ontario has increased the role for First Nations in planning and management. Districts have responded by seeking effective forums for aboriginal communities to have a greater say in the planning and management of forest resources nearby. It is mandatory for forest Management Plans to include a detailed Native Background Information Report and Native Values maps. Districts have provided financial assistance to some communities to either prepare these components themselves, or to hire archeological research contractors.

In some districts, First Nations are represented directly on the forest management planning team with industry and government, responsible for the planning decisions for each five-year plan.

## Silvicultural Opportunities

Forest renewal offers a long list of operational requirements: site preparation, growing trees, planting, tending, thinning, spraying and more. Many First Nations have experience in silvicultural activities, and District Managers have sought specific agreements between industry and First Nations to detail the type and scope of contract work that can be made available on a competitive basis.

This work, taken together, can contribute to an effective economic development program.

## Training and Employment

Although MNR is not the ministry with a training mandate, District Managers have found ways to help coordinate existing federal and provincial programs to assist Aboriginal communities to prepare for increased participation in forest management activities.

On a local level, Districts have provided hands-on training for many years, for example, through the Native Internship Program and Sault College's Aboriginal Resource Technician Program. MNR's Aviation, Flood and Fire Management Branch has trained firefighters on several reserves to prepare them for bidding on contracts.

In some Districts the forest industry provides the training strategy, recruitment and hiring, and business opportunities for independent contractors. In some instances, MNR is taking the lead to assist in providing the building, equipment and leadership to get a training center for Aboriginal peoples.

In all Districts, there have been joint projects with First Nations for many years, with MNR providing the training, funding, facilities and equipment.

## District Progress

MNR is required to report on the district-by-district progress of negotiations under T&C #77. Of the 26 MNR districts, five are outside the Area of the Undertaking; Aylmer, Aurora, Cambridge, Midhurst, and Peterborough. A more detailed description of benefits provided to Aboriginal communities by MNR districts follows.

### Algonquin Park

#### Management Unit: Algonquin Park Forest

There are no First Nations or other Aboriginal communities situated within the Algonquin Park Forest. Algonquin Park is part of the traditional territory of several Algonquin communities surrounding the provincial park including Golden Lake, Mattawa, Bancroft, Whitney, Sharbot Lake and Ottawa. Portions of the park are also included in the Robinson-Huron and Williams Treaty areas.

Ontario and the Federal Government are engaged in land claim negotiations with the Algonquins of Ontario. Discussions continue with the Algonquins on forest-related economic opportunities as part of the ongoing land claim negotiations. It is anticipated that Aboriginal communities

will increase their level of participation in forest management once the land claim is finalized.

Several Algonquin community members are employed in sawmill and woodland operations that harvest timber from Algonquin Park. The Algonquin Forestry Authority (AFA) has been involved in and continues to enter into contractual arrangements for road maintenance and silvicultural work with individual Algonquins and with community economic development corporations.

## Bancroft District

### Management units: Bancroft, Minden, Mazinaw

There are no First Nation communities in the Bancroft District. However the Algonquin First Nation has satellite communities around the Bancroft, Sharbot Lake and Whitney areas. Metis communities in the area are participating in forest management activities. The Algonquins of Golden Lake and the Algonquins of Baptiste Lake requested forestry reports to identify and assess opportunities.

The District initiated discussions with the Algonquins of Whitney, Kawartha Nishnabe and Curve Lake First Nations to identify opportunities to become involved in the SFL process. Negotiations between forestry partners and Algonquin communities were facilitated through the SFL negotiation process.

The Algonquins of Whitney became a full member with a local forest company that is a partner in the SFL negotiations. Through this partnership the Aboriginal community has an annual wood harvest allocation of 100 hectares. A harvesting contract with a second local forest company provided access to 741 hectares of harvest area. An agreement with a third forest company provided an additional 120 hectares of harvest area. Approximately 10 First Nation members are employed in the forest sector. Two thousand cubic metres of wood are allocated to Aboriginal people in the Bancroft District.

Aboriginal communities are less involved with renewal and maintenance and forest management planning activities. Aboriginal people in the area have provided tree-marking services.

Training in careful logging practices, road construction and forest operations compliance is provided to the Algonquins of Whitney as a member of the Bancroft Forestry company.

## Chapleau District

**Management units: Superior Forest, Pineland Forest, J. E. Martel Forest, Upper Spanish Forest**

Brunswick House First Nation has had very positive working relations with a local forest company. The First Nation has identified information on where their members could provide a skilled labour force and equipment to work for the company. The local company has hired equipment and harvest contractors from the Brunswick House First Nation.

A local forest company contracts its Geographic Information System (GIS) and some specialty forest management tasks to Cree Tech Inc. a company owned by a member of Chapleau Cree First Nation. The company has entered into negotiations with a group of forest technicians and members of the First Nation to pursue silvicultural opportunities. A harvesting contractor working for the company has hired band construction equipment and provided employment opportunities.

Chapleau Ojibway First Nation and a local company signed an agreement to have a portion of their privately-owned Native land harvested and regenerated. At least one member of the First Nation is employed at the local company sawmill.

North Shore Tribal Council and a Chapleau-based company discussed a transfer of fiber harvested by the North Shore Tribal Council. The Council acquired an overlapping licence on the Mississagi Management Unit. The company hired six Aboriginal employees and the harvesting contractor working for the company hired thirteen Aboriginal employees. The company has also identified thinning, cone collection and forest sampling opportunities for consideration by First Nations.

## Cochrane District

**Management units: Cochrane, Driftwood Forest, Iroquois Falls Forest, Moose River, Smooth Rock Falls Forest**

The eight First Nations in the Cochrane District are Attawapiskat, Fort Albany, Fort Severn, Kashechewan, Mocreebec Indian Government, Moose Factory, New Post and Weenusk.

New Post First Nation signed a letter of intent with a local forest company for the Moose River Management unit. The letter of intent confirms a desire by the parties to negotiate a co-management/harvesting agreement, to cooperate in the development of a business plan, to define co-managed

harvesting areas and a training plan, and to develop the roles and responsibilities for a First Nation liaison officer to work with both parties in all areas of forest operations. The parties are discussing a range of opportunities including harvesting, road building and silviculture. The First Nation has contracts to cut a total of 80,000 cubic metres in two management units. The community has a third party overlapping licence on the Iroquois Fall Forest Management unit to supply 13,000 cubic metres of hardwood. The community was also offered an opportunity to harvest 10,000 cubic metres on the Cochrane Management Unit and 5,000 cubic metres north of the community of Cochrane. A local company and Northern College co-sponsored heavy equipment training for 10 to 12 members of the New Post First Nation. Two forest companies are sponsoring three Aboriginal trainees.

Moose Cree First Nation signed a letter of intent with a local forest company for the Moose River Management Unit. The letter of intent confirms a desire by the parties to negotiate a co-management/harvesting agreement, to cooperate in the development of a business plan, to define co-managed harvesting areas and a training plan, and to develop the roles and responsibilities for a First Nation liaison officer to work with both parties in all areas of forest operations.

## Dryden District

### Management units: Dryden, Wabigoon Forest, English River Forest

The two First Nations located in Dryden District are Eagle Lake and Wabigoon.

Wabigoon First Nation, through an affiliated company Noopimiing Anokeewin, has opted not to join the SFL but continues to harvest on the Dryden Forest. Noopimiing Anokeewin harvested 10,000 cubic metres in the Dryden District and a contract was provided to harvest 25,000 cubic metres in the Wabigoon Forest. Actual wood harvested was 33,817 cubic metres in the Wabigoon Forest. It is estimated that 20 person-years of employment were provided to community members. The community had a thinning contract that provided employment for six community members for a six-month period. The value of contracts issued to the community is estimated at $102,000.

Eagle Lake First Nation has opted not to join the SFL but continues to harvest on the Dryden forest. The community harvested 4,500 cubic metres in the Dryden Forest and was under contract to harvest 12,000 cubic metres in the Wabigoon Forest. Seasonal employment of eight

months per year is provided for 10 to 12 community members. A thinning contract with the community provided employment for six community members for a six-month period. The value of contracts issued to the community is estimated at $257,000.

Lac Seul First Nation and a local company have discussed harvesting opportunities but to date, no harvesting contracts have been arranged. The community obtained a thinning contract that provided employment for nine community members for a six-month period. The value of contracts issued to the community is estimated at $19,000.

The MNR employed one Aboriginal person for a nine-month contract and sponsored two Native co-op high school students. A local forest company has since hired the contract employee as a silvicultural technician.

## Fort Frances District

### Management units: Seine River Forest, Sapawe, Manitou Forest, Fort Frances, Flanders

The eight First Nations located in the Fort Frances District are Big Grassy, Couchiching, Lac La Croix, Naicatchewenin, Nicickousemenecaning, Rainy River, Seine River, and Stanjikoming First Nations.

A local forest company has a strategic SFL partnership with Naicatchewenin Development Corporation. An agreement between the parties outlines the framework for a business-to-business relationship. The community was allocated 22,720 cubic metres of wood. The community had a tree-planting contract estimated at $58,000.

Rainy River First Nation, through an affiliated company Manitou Lumber, has a commitment for 19,916 cubic metres of wood. The community had a tree-planting contract estimated at $8,000. Manitou Lumber employed fifteen community members in its mill operation and one member in its harvesting operation.

Couchiching First Nation, through an affiliated company, TEA logging, was allocated 5,240 cubic metres of wood.

A local Metis member was allocated 2,109 cubic metres of wood.

Big Grassy First Nation, through an affiliated company, AMC Contracting, was allocated 23,928 cubic metres of wood.

Stanjikoming First Nation had a tree-planting contract estimated at $14,000.

United Native Friendship Centre was allocated a one-time allocation of 5,118 cubic metres of wood as a training opportunity. Training opportunities have been successfully pursued with the Centre.

## Hearst District

### Management units: Gordon Cosens Forest, Hearst Forest, Kapuskasing

Constance Lake is the only First Nation in the District.

Constance Lake First Nation, through an affiliate, Mammamatawa Inc. was allocated 12,035 cubic metres of wood in addition to harvesting on other licence areas. The First Nation is negotiating a wood supply exchange of 75,000 cubic metres of wood.

## Kenora District

### Management units: Kenora, Patricia Forest, Pakwash Forest (Patricia and Pakwash Forests have been amalgamated into the Whiskey Jack Forest)

The thirteen First Nations communities located in the Kenora District are Big Island, Dalles, Grassy Narrows, Northwest Angle #33, Northwest Angle #37, Ojibway of Onegaming, Wauzhushk Onigum, Shoal Lake #39 (Iskutewisakaygun), Shoal Lake #40, Wabaseemoong, Wabauskang, Washagamis Bay, and Whitefish Bay First Nations. Big Grassy First Nation is located in Fort Frances District but has an interest in resource planning in Kenora District.

Shoal Lake #39 First Nation holds a licence for a wood allocation of 1,790 cubic metres. It is estimated that three full time jobs will be created. The community was licensed for timber clearing on a commercial aggregate site to harvest 2,345 cubic metres of wood with an estimated three full time jobs being created.

Wabaseemoong First Nation has a licence for a wood allocation of 8,522 cubic metres. It is estimated that six full time jobs will be created. The community was under contract to plant 70 million trees.

Mitigonaabee Resource Management was under contract to thin 150 hectares of jack pine, providing 15 part time jobs.

Dalles First Nation was under contract to thin jack pine plantations that provided five part time jobs.

Wabauskang First Nation, through affiliates, Mikinaak Logging and Petiquan Logging, has a wood allocation of 1,550 cubic metres. The community employs an estimated 11 members.

Grassy Narrows First Nation, through an affiliate, K&Q Logging, has a wood allocation of 13,300 cubic metres. The community employs approximately 45 members.

## Kirkland Lake District

### Management units: Elk Lake, Iroquois Falls South, Walter L. Plonski Forest, Timiskaming, Watabeag

The three First Nation communities located in the Kirkland Lake District are Wahgoshig, Beaverhouse and Matachewan.

Wahgoshig First Nation was offered a 200-hectare block to harvest. The MNR contracted with a community member for information collection, values identification and mapping. A local forest company contracted with the First Nation to hire forestry equipment and crews. Early discussion between the First Nation and forest companies focused on opportunities in silviculture with the objective of developing increasing contract sizes as a record of successes is documented. These successes will eventually lead to opportunities in harvest contracts. Local forest companies have entered into and successfully completed mechanical site preparation and pre-commercial thinning contracts with the First Nation. The community successfully completed a 130 hectare pre-commercial thinning contract. The First Nation received $114,000 in forest management contracts. It is estimated that seven Aboriginal people work in mill and bush operations.

## Parry Sound District

### Management units: Bracebridge, Georgian Bay

The six First Nations located in the Parry Sound District are Henvey Inlet, Magnetawan, Moose Deer Point, Shawanaga, Wahta Mohawks, and Wasauksing. As well, Dokis First Nation is active in forest management in the district.

First Nations in the district have participated in forest management planning meetings. Land claims and boundary disputes are reasons that some First Nations have elected not to participate in forest management planning or to pursue forest management opportunities.

Henvey Inlet First Nation has expressed an interest in pursuing wood allocations and training opportunities. Discussions between Shawanaga and a local forest company around employment opportunities in a harvest block adjacent to their territory ended when the Alban mill closed.

Dokis First Nation is directly adjacent to the District and is interested in pursuing wood allocations and training opportunities.

The SFL holder has attended meetings with First Nations and offered wood allocations and technical training opportunities.

## Pembroke District

### Management units: Pembroke

Discussions involving the Algonquins of Golden Lake First Nation (AGLFN) and a local forest company are at an advanced stage. The community is becoming involved in forest management and harvesting on a larger scale, including participation in SFL negotiations. The First Nation, through an affiliate Makwa Economic Development Corporation (MEDC), is pursuing forest management opportunities. A forest resource licence was issued to harvest 112 hectares or 20 per cent of the available wood allocation. The community has two forest companies: Reserve Forestry and Guiding and Randy Commanda Forestry. The community is becoming a partner in development of an SFL that will involve a shareholder agreement and comprehensive business plan. An additional 105 hectares was provided to one of the three First Nation forest companies. Harvest operations resulted in an estimated four to six jobs for Aboriginal people. Makwa Economic Development Corporation and the Federal Forestry Service negotiated a long-term lease for the former tree nursery site at Petawawa Research Forest. A renewal and maintenance agreement was signed with MEDC to conduct tree marking on 300 hectares on the community allocation area. MEDC hired a forest manager to plan and implement harvest and silviculture operations. The forest manager has completed tree-marking contracts. Silviculture and sustainable forestry education opportunities continue to be provided to band members.

## North Bay District

### Management units: Temagami, Nipissing Forest

The three First Nation communities located within North Bay District are Teme-Augama Anishnabai, Dokis and Nipissing. North Bay District has also been working closely with a group of Aboriginal people, members of

the Algonquins of Golden Lake, who identify themselves as the Mattawa/North Bay Algonquin community.

Discussions on forestry opportunities with Dokis, Nipissing and Mattawa/North Bay Algonquins are at an advanced stage. Agreement was reached on the approval of a proposal for funding of a pre-commercial thinning project. The three First Nations are implementing the project in conjunction with the SFL company. A First Nation working group has been developed with representation from local Aboriginal communities. The First Nations are involved in the preparation of the Forest Management Plan and in increasing access to opportunities in the forest business sector through silvicultural contracts and harvest operations. A proposal by the SFL company was approved by the Forestry Futures Trust Fund to contract for a pre-commercial thinning project to be implemented by three local First Nations businesses. The value of contracts issued to Aboriginal communities is estimated at $250,000 for pre-commercial thinning. The three communities participated in preparation of Background Information Reports and Native Values Maps. The communities are sitting as members of the planning team for the 1999 Forest Management Plan. The Ministry of Natural Resources provided partial funding for three liaison positions in Aboriginal communities to explore forest economic development opportunities and to participate in forest management planning.

Dokis has an FRL license for five years for a total of 17,544 cubic metres of wood. An opportunity was provided to sign an overlapping licence to be a partner in the SFL. Negotiations have been initiated to have Dokis sign an overlapping licence agreement and to become a partner in the SFL.

A member of the Nipissing First Nation was issued an overlapping FRL licence, as the member is a partner in the SFL. The licence is for five years and provides a wood allocation of 14,938 cubic metres.

The Mattawa Algonquin community has expressed an interest in harvesting opportunities in unassigned allocated blocks, and in work on a contractor basis on an existing licensee area.

Temagami First Nation discussions are at an advanced stage. Opportunities exist for silvicultural contracts and to conduct harvest operations in the area set aside in the Temagami Comprehensive Planning exercise. The First Nation, SFL holder and two local companies are discussing renewal and maintenance activities on licensed areas. The First Nation has a FRL for a two-year term to harvest 7,650 cubic metres of wood. Five seasonal jobs are associated with the licence. Temagami First

Nation signed a renewal and maintenance agreement to complete 265 hectares of manual tending that employed 12 community members during the term of the contract. Members from the community attended training sessions in forestry operations. Eight members received chainsaw certification, one member received skidder certification and one member attended a two-day compliance training session.

It is estimated that three full time and five part time jobs are associated with the licenses issued to the Aboriginal communities.

Training opportunities provided to First Nation members were for three members to attend the tree marking licensing course, and one member to attend compliance monitoring training; a summer employment opportunity was provided by the SFL company.

Discussions with the Metis Nation of Ontario are at an early stage.

## Nipigon District

### Management units: Auden Forest, Nipigon, Lake Nipigon Forest, Nakina Forest, Longlac Forest, Geraldton, Steel River, Nakina North Forest, Ogoki Forest, Part of Black Sturgeon Forest

The fifteen First Nations located in the Nipigon District are Aroland, Eabametoong, Ginoogaming, Kasabonika, Lake Nipigon Ojibway, Landsdowne House, Long Lake, Marten Falls, Nibinamik, Ojibways of Pic River, Pays Plat, Red Rock, Rocky Bay, Wawakapewin, and Webequie First Nations.

Discussions with the Ojibways of Pic River First Nation, through an affiliate, Pic River Development Corporation, are at an advanced stage. The community developed and signed a business plan for participation in the SFL. The community is negotiating an overlapping five-year FRL for a 289,700-cubic-metre wood allocation. Discussions are focusing on access to licences, silviculture and employment opportunities. A request for a community sawmill remains unresolved. It is estimated that 21 community members are employed in the forestry sector.

Aroland First Nation is discussing potential business, employment, planning and licensing opportunities. The community was invited to participate as a member of the forest management planning team. The community is pursuing overlapping agreements in two forest management units. A community member was issued a third-party salvage licence for 13,000 cubic metres of wood. The community completed a tree plant

contract estimated at $14,200. It is estimated that 35 community members are employed in the forestry sector.

Eabametoong First Nation is discussing potential business, employment, planning and licensing opportunities. The community is pursuing overlapping agreements in two forest management units.

Marten Falls First Nation is discussing potential business, employment, planning and licensing opportunities. The community is pursuing overlapping agreements in two forest management units.

Lake Nipigon Ojibway First Nation is pursuing silvicultural opportunities. The community was under contract to complete tree planting and stocking assessment.

Rocky Bay First Nation has an overlapping FRL for 72,000 cubic metres of wood. The community is pursuing a joint venture to develop expertise and capacity in harvesting. The First Nation had a $210,800 silvicultural contract for tramping, site preparation and tree planting. It is estimated that 14 community members are employed in the forestry sector.

Red Rock First Nation is harvesting under an overlapping FRL for 51,400 cubic metres of wood. The community is pursuing increased harvest allocations and other forest management opportunities. The First Nation had a $43,000 contract to complete tree planting on two forest management units. It is estimated that 19 community members are employed in the forestry sector.

Gull Bay First Nation, through an affiliate, Nigaani Enterprises, has a harvest allocation. The community harvested 105,000 cubic metres of wood. An estimated 67 community members work in the forestry sector.

Ginoogaming First Nation has an estimated 60 members employed in the forest mill in Longlac.

Long Lake #58 First Nation has an estimated 14 members employed in the forestry sector.

## Red Lake District

### Management units: Trout Lake Forest, Red Lake Forest and the Pakwash Forest (Management for Pakwash Forest is administrated by Kenora District)

There are seven First Nations communities located within the Red Lake District: Deer Lake, Kee Way Win, MacDowell Lake, North Spirit Lake,

Pikangikum, Poplar Hill and Sandy Lake. All seven communities are remote (winter access only) and are not located within any management units.

Pikangikum First Nation's traditional use area overlaps a portion of both the Red Lake and Trout Lake Forest management units. It has been in discussion with local forestry companies to pursue employment opportunities.

Wabauskang First Nation, a community within the Patricia Forest, Kenora District, was in discussion with the Red Lake MNR on Native Values Mapping and economic development opportunities on the Trout Lake Forest. The community, through an affiliate Mikinaak Community Development Corp., was issued an overlapping FRL to harvest 12,400 cubic metres of wood on the Trout Lake Forest. The sawmill at Ear Falls employs an estimated 27 Aboriginal people.

Cat Lake First Nation, a remote community within the District of Sioux Lookout with some traditional use area overlapping the Trout Lake Forest, also expressed an interest in pursuing forest management operations, planning and economic development opportunities. Discussions with a local forest company have been ongoing.

Lac Seul First Nation, a community within the District of Sioux Lookout, currently holds an overlapping FRL to harvest 57,000 cubic metres of wood through an affiliate Obishkokaang Resources Corp. This licence provides employment for six community members.

A local forest company on the Trout Lake Forest, in conjunction with the Dryden Tribal Council, provided adult education opportunities to qualify Aboriginal people for employment opportunities at the Ear Falls sawmill. On-the-job training opportunities were provided to newly hired Aboriginal people at the sawmill.

## Sault Ste. Marie District

### Management units: Algoma, Mississagi

The five First Nation communities located within Sault Ste. Marie District are the Ojibways of Batchewana, Garden River, Thessalon, Mississauga, and Serpent River.

An individual within the North Shore Tribal Council (NSTC) area was issued a FRL to access wood allocations on 99 hectares. Regular meetings were held with local First Nations and the North Shore Tribal Council to

discuss forest management opportunities under the SFL and to negotiate a framework agreement. NSTC was under a $10,000 contract to plant 54,000 seedlings and a $18,000 contract to provide tree-plant assessment.

Two forest companies in the Sault Ste. Marie area were in regular dialogue with Batchewana First Nation and Garden River First Nation. The meetings provided a forum to explore interests, capabilities, training, development needs, and present opportunities to participate on forest management planning teams and local citizen committees. Local forest companies and others provided training opportunities in native conservation officer, first aid, CPR, cut and skidder certification, and tree marking. It is estimated that 15 Aboriginal people work in the forest sector.

Garden River First Nation had harvesting contracts for 40,200 cubic metres of wood. The community had a contract with a local forestry company for on-reserve road construction and to install five bridges.

## Sioux Lookout District

### Management units: Caribou Forest, Lac Seul Forest, Sioux Lookout (Abitibi), Sioux Lookout Crown Forest

The fourteen First Nations located in the Sioux Lookout District are Lac Seul, Cat Lake, Windigo, New Slate Falls, New Osnaburgh and Ojibway Nation of Saugeen. Lac Seul, Slate Falls and the Ojibway Nation of Saugeen are the only communities located within the Area of the Undertaking. Mishkeegogamang (Osnaburgh) and Cat Lake have some of their traditional lands located within these forest management units.

Lac Seul First Nation members continue to be hired in mill, forest and ferry operations in the area and this First Nation community has a harvesting contract with a local forest company. Additional harvest allocations are being pursued, as Lac Seul is one of the parties negotiating for the Sioux Lookout Crown SFL.

Slate Falls First Nation expressed interest in road access to their community and employment from harvest activities. The local forest company continues to negotiate forest operations agreements with the First Nation.

With respect to future harvesting opportunities, the discussion between the Ojibway Nation of Saugeen, MNR and the local forest company are ongoing.

## Sudbury District

### Management Units: Sudbury, Lower Spanish Forest, and Spanish River

The ten First Nations within Sudbury District are Zhiibaahaasing (formerly Cockburn Island), Sagamok Anishnawbek, Sheguiandah, Sheshegwaning, Ojibways of Sucker Creek, Wahnapitae, McChigeeng (formerly West Bay), Whitefish Lake, Wauwauskinga (formerly Whitefish River) and Wikwemikong.

Sagamok Anishnawbek First Nation received FRLs to harvest approximately 23,364 cubic metres of wood. Contracts were issued to the community to plant 177,000 trees and conduct manual tending and pre-commercial thinning on 90 hectares. It is estimated that 22 community members received seasonal employment through the contracts. Amendments to the FMP provided increased wood allocations of 889 hectares to the year 2000, and 1,216 hectares beyond that, to meet long-term commitments to the First Nation.

In December 1997 an amendment to the FMP approved the allocation of 57,982 cubic metres of wood to ten First Nations in the District.

The SFL holder for the Sudbury Forest is to negotiate an agreement with local First Nations to include Aboriginal people in forest management planning, silvicultural contracts, training and harvesting. An opportunity to become a member of the forest management planning team was extended to the local First Nation communities.

The SFL holder for the Spanish Forest awarded 300 hectares of juvenile spacing to local First Nations communities.

Four First Nation members attended the provincial tree-marking course.

Seasonal employment opportunities were offered to First Nations, as well, as commitment to sponsor Forestry Technician Co-op student placement was maintained.

## Thunder Bay District

### Management units: Dog River-Matawin Forest, Port Arthur, Spruce River Forest, Thunder Bay, Brightsand Forest, Black Sturgeon Forest, part of Caribou East, Armstrong Forest, and Kiashke River Forest

The four First Nations located within Thunder Bay District are Fort William, White Sand, Lac Des Mille Lacs and Gull Bay. In addition,

Thunder Bay District has been consulting with a number of Aboriginal communities and Metis organizations.

Red Sky Metis were advised of the SFL process that occurred between MNR and the forest industry on the former Crown Management Unit. The community was encouraged to approach members of the SFL to discuss employment opportunities and access to silvicultural contracts.

Saugeen First Nation continues to hold a harvest allocation of 17 hectares in the Brightsand Forest.

White Sand First Nation has allocation areas set aside for future harvesting opportunities, as a third-party operator on the Armstrong Forest. Two forest companies are in negotiations with White Sand First Nation for harvest allocations, tree planting and silvicultural work.

## Timmins District

### Management units: Romeo Malette Forest, Shiningtree, Timmins Forest, Timmins

Mattagami First Nation is in discussions on economic development opportunities on the Shiningtree Management Unit. The community has expressed interest in assigning a community member to participate as an active member on the local citizens committee and forest management planning team for the Shiningtree 2001 Forest Management Plan. The First Nation and MNR are in early stages of discussing Native Values Mapping. The SFL holder and the community are in discussion on data sharing opportunities. The SFL holder funded Forest Resource Inventory mapping for the Mattagami First Nation. The community had a pre-commercial thinning contract on the Shiningtree forest management unit. Five community based fire crews were under contract to the MNR to provide provincial fire protection services. Funding requests for heavy equipment operator training was deferred to 1998/99. A First Nation member was sponsored to attend the Native Resource Technician program at Sault College. MNR hired one Aboriginal technician to develop a partnership on the management of treaty traplines.

Matachewan participated briefly in the Native Public Consultation Process on the Timmins Forest FMP.

A local forest company provided $130,000 in renewal and maintenance contracts to First Nations.

## Wawa District

**Management units: Big Pic Forest, Black River Forest, Magpie Forest, Nagagami Forest, Wawa Forest, White River Forest**

As a means of economic development, Michipicoten First Nation has been finalizing the purchase of a local sawmill. Michipicoten First Nation negotiated a wood allocation of 1,000 cubic metres. A First Nation member has been receiving training in forestry activities.

It is estimated that 35 Hornepayne First Nation members are employed in the forest sector. A community member was under contract to develop the Native Background Information Report and Native Values Map.

Pic Mobert First Nation has actively participated in forest management planning activities within the district. Pic Mobert First Nation negotiated a wood allocation of 4,666 cubic metres. The community was under contract with a forest company to plant 104,000 trees and to collect 54 hectoliters of tree cones.

Pic River First Nation participated in the preparation of the White River FMP. A community member was under contract to develop the Native Background Information Report and Native Values Map. Discussions have been ongoing between the SFL holder, Pic River First Nation and the Pic River Development Corporation. Pic River First Nation negotiated a wood allocation of 48,200 cubic metres.

# Chapter 10

# Ongoing Development and Future Directions

Through specific scientific research, technical development programs and policy development programs, MNR will keep pace with the ever-expanding knowledge base for sustainable forest management.

The programs span a wide range of subjects including areas such as the development of better data and information sources, the creation and implementation of new policies, procedures and guidelines for management planning, the development of new forest management methods, models and tools, and continuing long-term scientific studies.

This chapter outlines MNR's progress, in conjunction with its partners, on these scientific, technical and policy programs up to 1997/98.

## New and Improved Data and Information Sources

### T&C # 81 Provincial Wildlife Population Monitoring

Since 1990 MNR has worked in partnership with the federal government and non-government organizations to gain access to information and to expand the monitoring programs for a variety of wildlife species. Some of the program monitoring partners include the Long Point Bird Observatory, the Thunder Cape Bird Observatory and Canadian Wildlife Service. Species to be monitored include selected hawks and falcons, owls, songbirds, frogs and small mammals.

MNR established a system of regional wildlife assessment units in 1995/96 and work continued in 1997/98 to focus the direction for the Wildlife Assessment Program. Staff are in the process of focusing in on key species to monitor, and developing monitoring methods to be used.

The Fish and Wildlife Aging Unit, Northwest Science and Technology, continues to assist in the science function of describing wildlife and fisheries populations.

### T&C # 96 Silvicultural Effectiveness

To improve the assessment, recording and reporting of silvicultural effectiveness related to both natural and assisted renewal methods, forest operations prescriptions are a requirement of the Forest Management Planning Manual which was approved in September 1996. A prescription is a site-specific, integrated set of harvest, renewal and maintenance activities that must be developed before any operations may begin on a particular site. A Registered Professional Forester must certify a prescription.

Work is ongoing on the development of a draft Free-Growing Regeneration Assessment guideline which will provide direction for forest managers on assessing renewal success.

### T&C # 97 Forest Ecosystem Classification Program

The Ecological Land Classification (ELC) program has been developed to provide consistent approaches to the description, classification and inventory of Ontario's diverse ecosystems. Resource managers will have a variety of interpretations for resource management decision-making, based on province-wide ecosystem classifications.

A principal focus of the program is the completion of detailed ecosystem classifications for the forested and wetland ecosystems throughout the province. The ELC program has completed classifications for the forested portions of Northeast, Northwest and Central Ontario.

A number of ELC interpretation manuals have been produced including field guides for Northeast and Northwest Ontario and wetland ecosystem classifications for Northwest Ontario. A second edition of the field guide for Northwest Ontario has been released and the field guide for Northeast Ontario is under revision. The wetland ecosystem classifications for Northwest Ontario are being tested for potential expansion of use in Northeast Ontario. Plant identification guides have also been printed.

A centralized provincial ecological data repository has been established to provide ready access to standardized ecological plot data that will support ELC and other collaborative research and interpretation development projects. Currently, the repository now contains approximately 8,000 plot records.

A number of developments to improve inventory and mapping technologies are ongoing. They investigate Geographic Information Systems (GIS) and Remote Sensing technology for mapping ecosystems. The use of

various GIS-based fabrics at various scales is being explored in support of land use and resource management planning.

Technology transfer and training programs for resource practitioners are continuing.

### T&C # 99 Areas of Natural and Scientific Interest (ANSIs)

### Life Science

The GIS-based method for conducting gap analysis on large electronic databases was enhanced and used to conduct analyses on numerous Site Districts (2E-3, 2W-3, 3E-1, 3E-2, 3E-3, 3E-4, 3E-6, 3S-1, 3W-4, 4E-1, 4E-2, 4E-5, 4W-2, 5E-4, 5E-7, 5E-8, 5E-12). The updates and revisions to the Site District 5E-1 life science representation report, and the Site District 3E-5 analysis, were completed by consultants. The partnership between Parks Canada and MNR to consider life science representation needs in Site Districts 3W-3 and 3W-5 continued. Old growth pine and other representation needs in several Site Districts were assessed (Site Districts 4E-4, 5E-6, 5E-9, 5E-10, 5E-11).

Reassessments of unrepresented landform/vegetation features were completed for the western portion of Manitoulin Island (Site District 5E-2).

Discussions were held with fisheries biologists to determine how aquatic ecosystem representation, and protection of aquatic special features, could be accomplished within the *Lands for Life* process, in the absence of a representation framework for aquatic ecosystems.

Participation in a workshop held by the District Municipality of Muskoka enabled discussion of ways in which the municipality's natural heritage area system could be implemented. A gap analysis workshop was held in conjunction with environmental groups in Toronto.

### Earth Science

MNR Northeast Region was identified as having significant gaps in earth science (glacial geology) representation. Two earth science gap analysis studies were completed for the area north of Lake Huron and the Hearst-Timmins area, to address these gaps in representation. The studies consisted of extensive literature and air photo investigations undertaken to identify candidate sites, which were then field tested during reconnaissance inventories. As a result of this work, candidate protected areas were identified.

A reconnaissance earth science gap analysis project was also undertaken in Site Region 3S, in combination with a life science gap analysis project. Previously identified candidate protected areas, as well as new sites, were identified as a result of an extensive literature and air photo review. These were field tested through reconnaissance inventories, and candidate protected areas were identified.

A review of gap analysis needs in the rest of the Area of the Undertaking was also completed, and several new candidate protected areas were identified and field tested in MNR Northwest Region as a result.

In the year 1997/98, additional earth science conservation work was undertaken on ANSIs in Southcentral Region (in particular Prettys Hill ANSI).

### T&C # 100 Growth and Yield Studies

The Forest Growth and Yield Program was established in 1991 to provide forest managers with better information on the growth and dynamics of Ontario's forests. Beginning in 1992, a province-wide network of permanent sample plots (PSPs) was established over a range of forest site and management conditions. Data collected from these plots provide information to forest managers on site and soil conditions, vegetation composition, tree growth, tree mortality and regeneration, and wildlife habitat in Ontario's forests. The program established approximately 1,100 mortality plots and 3,300 growth plots during 1992-96. The data being collected from all PSPs are the basis for the development of new models for predicting forest stand growth, and for a provincial monitoring program. Plot re-measurement was underway in 1996/97.

Work is ongoing with the production of Density Management Diagrams (DMDs), which are forest management tools that assist forest managers in understanding growth and yield dynamics within forest stands. A DMD helps a manager to predict the structure development of fully stocked stands. A diagram provides information on average tree volume, stand height, average tree diameter, and stand density and mortality at various stages of stand development.

Work is underway with modeling activities associated with model validation and yield curve development.

## New Policies, Procedures and Guidelines

### T&C #27 (c) Clearcut Restrictions

The Forest Management Planning Manual requires the documentation of all planned clearcut areas by size classes, as well as the provision of a rationale for any clearcut areas that exceed 260 hectares in size, or that do not represent a range of sizes. These new reporting requirements began with the 1996 harvest year which was reported in the following year. Provincial level reports will be included with the 1998/99 annual report.

### T&C #52(e) Water Crossing Removal Criteria Development

A committee of Ministry of Environment and Energy, MNR and forest industry representatives was formed in July 1995 to develop geological, engineering, water quality, and safety criteria for use in determining water crossing removal for roads that are scheduled to be abandoned. As previously reported, a report on criteria for removal of water crossings of abandoned roads was produced in April 1996.

Criteria were subsequently reviewed and revised to be in conformity with the regulated Forest Management Planning Manual. A second version of the "Criteria for Removal of Water Crossings of Abandoned Roads" was developed and finalized in October 1997.

### T&C # 94(b) Environmental Guidelines

MNR is required to produce an implementation manual, referred to as the "Environmental Guideline for Timber Management Activities". The guideline is required to provide direction in relation to timber harvest layout, configuration and clearcut sizes, and to address the protection of the physical environment in the course of forest harvest, renewal and maintenance.

MNR's approach to meet this requirement is to develop two separate guidelines that address:

- protection of the physical environment;
- harvest layout, configuration and clearcut sizes.

In response to the first requirement, the "Forest Management Guidelines for the Protection of the Physical Environment" was published and released in January 1998.

Background research and analysis into historic fire patterns and emulating natural disturbance patterns is underway in support of developing further direction regarding harvest layout and configuration. Work is ongoing on fire disturbance sizes and frequency patterns at the site region level, with the involvement of the Provincial Forest Technical Committee.

### T&C #94(c) Guidelines for Pine Marten and Pileated Woodpecker Habitat

MNR was required to develop two new guidelines: 1) Forest Management Guidelines for the Provision of Marten Habitat; and 2) Forest Management Guidelines for the Provision of Pileated Woodpecker Habitat. As previously reported, both guidelines were released in May 1996.

### T&C # 98 Northern Ontario Wetlands Evaluation System

As previously reported in the 1996/97 report, the requirement to develop a Northern Ontario Wetlands Evaluation System has been delivered.

### T&C #103(a) Old Growth Conservation Strategies

The goal of the strategy is to ensure that old-growth forest ecosystems are maintained on the landscapes of Ontario now and into the future. The comprehensive strategy will be implemented through ecological land use and forest management planning.

An Old Growth Forest Policy Advisory Committee, established in 1992, released a final report in September 1994, with recommendations for conservation of old-growth forests of all species. In May 1993, the advisory committee also released an interim report on conserving old-growth red and white pine forests.

MNR released *A Conservation Strategy for Old Growth Red and White Pine Ecosystems* for Ontario in June 1994. Implementation of this strategy is under way through natural heritage conservation initiatives and through the forest management planning process.

MNR has developed a draft " A Conservation Strategy for Old Growth Forest Ecosystems on Crown Lands in Ontario". In July 1997, MNR posted a notice of public comment on this draft document on the Environmental Bill of Rights (EBR) registry. Additional work is required to finalize this proposed strategy.

### T&C #106 Roadless Wilderness Areas Policy

In 1995/96, MNR began the development of a policy statement on roadless wilderness areas. In May 1997, this policy was released and is referred to as "Ontario's Approach to Wilderness: A Policy".

### T&C #110 District Land Use Guidelines

Recommendations for an improved planning system were released for public review in March 1995. The recommendations were modified based on input from the public, in addition to new direction from MNR's Business Plan.

In February 1997, the Minister of Natural Resources announced *Lands for Life*, a comprehensive land use planning process that integrates the protection and use of Ontario's natural resources. Round Tables made up of citizens with a diverse range of interests were established for three ecologically-based planning regions (Great Lakes-St. Lawrence, Boreal East, and Boreal West). Public consultation by the Regional Round Tables commenced in June 1997 and continued through to July 1998, at which time recommendations were submitted to the Minister of Natural Resources.

## New Forest Management Methods, Models and Tools

### T&C #80 Long-Term Scientific Studies and Research

### Effects of Timber Management on Tourism Values

This study is designed to assess the effectiveness of the provincial timber management guidelines for the protection of tourism values; and, where appropriate, to make recommendations for improvements to the guidelines. The study consists of several initiatives.

Development of a Remote Tourism Decision Support System (DSS) is continuing, and spatially referenced databases have been developed.

Work is continuing with modeling shoreline aesthetics in the Boreal Forest in Northern Ontario, where most recreational use of the forest is water-based. The surrounding forest provides an important scenic backdrop for the recreational experience and the shoreline aesthetics project attempts to understand the aesthetic values that recreationists place on different forest types, as well as disturbances on the landscape. Efforts in the third year of this project concentrated on the collection of images and forest descriptions.

Two functional DSSs were developed after interviews with Sudbury area anglers. The models (one for walleye and one for lake trout) examine the various regulations that could be imposed and the support that anglers would have for those initiatives through choice-based questions. Also, a complex questionnaire was developed to examine the issue of road access and activities permitted on Crown land in the Sudbury area. The questionnaire involves both specific and generic choice based questions that provide an ability to examine trade-offs for various management options for a land base.

### Moose Guidelines Evaluation

This project is assessing the effectiveness of Ontario's Timber Management Guidelines for the Provision of Moose Habitat, and will determine the effects of current forest management practices on moose and other wildlife habitat.

Field research continued with the continued collection and spatial analysis of location data for 60 moose. The world's first Global Positioning System (GPS) wildlife collars were deployed as part of this study on eight free-ranging adult cow moose in the South Wapageisi Lake area of Northwestern Ontario in 1994. These collars provided unprecedented quantity and quality of wildlife location data. Tracking moose locations helps determine how moose use different habitats available to them, and the key factors affecting their use.

To date, more than 500,000 records have been downloaded from GPS collars. In February 1998, GPS collars were recovered, refurbished and redeployed on all 60 moose originally collared.

Data on moose condition (blood and hair, body measurements, etc.) was also collected at the time of refurbishing and recollaring the moose. This data is collected to support ongoing studies of moose condition associated with habitat use.

In 1997/98, moose calving site studies were initiated.

Work continued on the evaluation and monitoring of moose aquatic feeding areas in the South Wapageisi Lake project study area and at the Coldwater Lakes Experimental Study Site near Atikokan. The main objective of monitoring moose aquatics is to refine the current ranking system and develop a repeatable and quantifiable method of ranking.

### Landscape Analysis of Wildlife Habitat:

This research program is designed to characterize natural patterns of disturbance across eco-regions, and to determine whether landscape patterns created through logging differ from those created by natural disturbance. Wildlife responses to habitat created by logging will be also measured to determine whether they differ from responses to habitat created by natural disturbance.

In support of this research, spatial data collection, mapping, analysis and decision-support tools will also be developed as required to assist in analyzing wildlife-forestry interactions and to aid in applying new research knowledge to sustainable forest management planning.

Work in these areas is ongoing. A computer-based natural disturbance and analysis planning tool (NDAPT) has been developed.

### Aquatic Effects Research

These long-term scientific studies are designed to assess the effectiveness of the provincial Timber Management Guidelines for the Protection of Fish Habitat, with an emphasis on the numerical measurement and modeling of land-use effects on aquatic ecosystems in northern Ontario. To date, aquatic effects research has been addressed through two main projects, the Coldwater Lakes experimental watersheds and the Comparative Aquatic Effects Program.

The Coldwater Lakes Research Project was initiated in 1990 to experimentally evaluate the effects of logging on lake ecosystems, and to provide information about the effectiveness of shoreline reserves in preventing those effects. This project is part of a larger integrated program that also addresses timber management effects on coolwater lakes and coldwater streams. To detect ecosystem responses, five years of intensive pre-harvest monitoring was accomplished during 1991 to 95. An experimental harvest took place during 1996/97 which will be followed by five years of post-harvest monitoring (1997 to 2001).

The Comparative Aquatic Effects Program was begun in 1995 to measure the effects of timber management on aquatic ecosystems in Ontario's boreal forest, and to test the effectiveness of current timber management guidelines on preventing or minimizing these effects.

To date, the program has focused on measuring timber-harvest effects on coldwater streams. Because coldwater stream habitat is tightly integrated

with the surrounding landscape, it is expected to be sensitive to disturbances in the surrounding catchment.

The program is investigating a number of areas, including the key aquatic habitat variables, to monitor the effects of timber harvest, the spatial scale of harvest impacts on aquatic ecosystems, the use of buffer strips to prevent sediment from moving overland and into waterways, and the effects of logging roads as barriers to fish migration.

### T&C #101 Full-Tree Harvesting and Long-Term Site Productivity

This 20-year study was established in 1993 to provide a quantitative assessment of the effects of full-tree harvest and full-tree chipping on ecosystem processes, which, ultimately, influence site productivity for a range of black spruce-dominated ecosites.

In 1997/98, detailed field measurements and laboratory analyses (third growing season after the experimental harvests were conducted) were carried out on three of the nine experimentally-treated sites. This data was taken to: 1) quantify early changes in soil nutrient pools, 2) provide an estimate of elemental leaching rates, 3) tract logging slash decomposition rates, and 4) measure early seedling growth.

### T&C #102 Tending and Protection Improvement Programs

MNR has a number of ongoing projects related to pest management (insects and diseases) and vegetation management. MNR has either on its own or in partnership with other provinces and the private sector funded a number of research projects.

### Pest Management

Funding was provided to the Canadian Forestry Service (CFS) to test a naturally occurring insect virus for control of gypsy moth, as an alternative to conventional insecticides. This was part of an ongoing research project begun with MNR support in 1982. In 1996, Health Canada registered this product, supported by data from MNR-funded studies. MNR is now working with the CFS to find a company to produce this product commercially.

Funding was provided to the CFS Environmental Impact project to conduct three related studies on Neem, a new botanical insecticide derived from the neem tree. MNR is now discussing with commercial manufacturers the potential for registering Neem for use in Canada.

Funding was provided to the CFS Insect Ecology Project to test a micro-encapsulation technology in the use of pheromones to control jack pine budworm and European pine shoot moth. 3M Company, which holds the patent on the technology, is a partner.

### Vegetation Management Alternatives

Since 1991, the focus of the Vegetation Management Alternatives Program (VMAP) at Ontario Forest Research Institute (OFRI) has been to reduce dependence on herbicides in Ontario's forests by developing effective, safe, economically viable alternatives, as well as to develop a better understanding of forest ecosystems. This has been accomplished through applied and basic research, education, and field delivery.

Fundamental research to advance underlying science that supports vegetation management practices, with an emphasis on ecosystems dynamics, biological control and social interfaces, is ongoing. Numerous articles and reports have been produced.

One of the goals of VMAP is to ensure that the alternatives being developed are environmentally sound. To this end a major study, the Fallingsnow Ecosystem Project, was established in 1993 to evaluate the effects on the environment of five alternative conifer-release treatments in a young spruce plantation located near Thunder Bay, Ontario. Researchers are comparing the effects of cutting with brushsaws, cutting with a mechanical cleaning machine, and applying herbicides by helicopter to what happens in untreated control plots and in the adjacent unharvested forest. Data collection and analysis from Fallingsnow Ecosystem Project will continue until 1998, when fifth-year post-treatment results can be reported.

### T&C #104 Socio-Economic Analysis

As reported in the 1995/96 Provincial Annual Report, a Socio-Economic Impact Model has been developed by MNR to help in the determination of economic and social impacts of non-timber values and alternative forest management scenarios in forest-management planning. Training on the model is ongoing with forest-management planning teams.

### T&C #107 Biodiversity Assessment, Landscape Management and Wildlife Habitat Supply Modeling

The provincial Forest Landscape Ecology Program at OFRI is assessing the effects of natural changes and human activity on the biodiversity and sustainability at the landscape level.

Work is continuing with the development of an Ontario-wide database which includes such themes as land cover, fire history and forest harvest history.

The Landscape Ecological Analysis Package (LEAP) model and user manual version 1 has been completed and is being used in the development of forest management plans. Work is also continuing with the development of a spatial fire model (ON-FIRE) and a digital fire history of Ontario, which will assist in determining natural fire disturbance patterns.

Forest Landscape Ecology Program staff have also been heavily involved in providing GIS and analytical support to a number of policy and planning initiatives, as well as conducting a number of training and technology-transfer sessions.

Work is continuing with the investigation and development of wildlife habitat supply modeling. A spatial habitat supply model has been developed for the South Central Region for moose, marten, pileated woodpeckers, and red shouldered hawks. This model is currently being modified for use in northeast Ontario. A combined habitat and population model for marten has been acquired and is being tested in support of the eventual evaluation and revision of the marten habitat guidelines. A spatial allocation model for use with the Strategic Forest Management Model is under development and evaluation.

### T&C #108 Geographic Information Systems

Geographic Information Systems (GIS) are designed to aid in the storage, organization, analysis and presentation of complex geographic data using computer systems. They are essential for the full development of modern resource management methods, models and tools.

GIS-capable computers and software were installed in all MNR district and area offices where a new forest management plan was being prepared or reviewed. As well, systems were installed in regional offices, Science Units, Research Units, and Systems Development Units.

Systems, software and technical training in all sites with a 1997, 1998 or 1999 forest management plan requirement were provided to meet the requirements of the GIS Information Systems plan. Automation of values data for sites with 1998 forest management plans was underway. Hiring of GIS support staff took place in a number of these sites, with further recruitment under way.

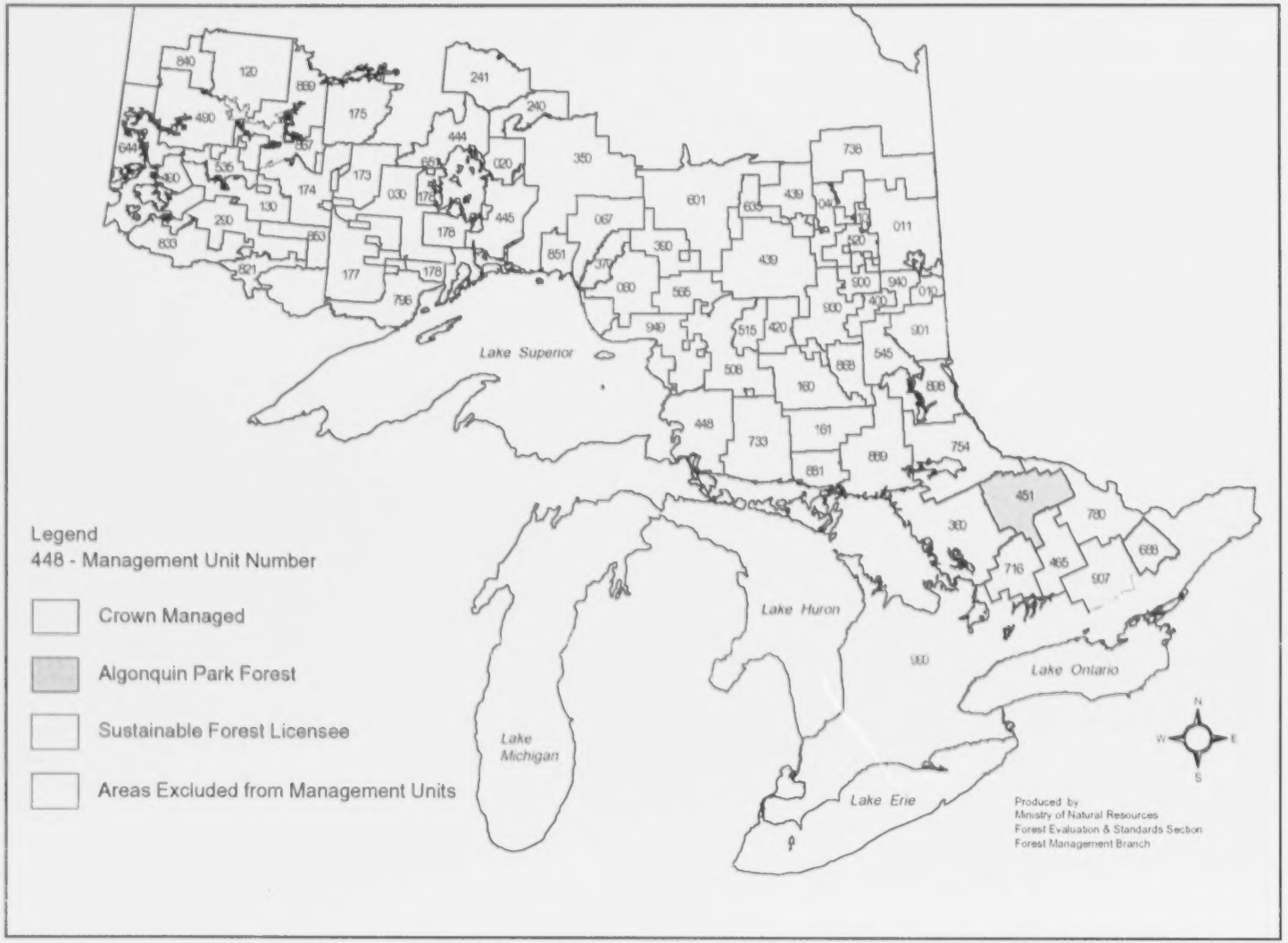
# *Appendices*

## Appendix 1
## All Land Classifications within Inventoried Area 1996

| Total Areas by Land Class (thousands of hectares) | By Ownership and Type | | | | | | | By Forest Region | | ALL |
|---|---|---|---|---|---|---|---|---|---|---|
| | Crown Lands | | | | | Non-Crown Lands | | All Ownerships | | |
| Land Classifications | Regular Crown Forest | Parks and Rec. Reserve & Protection | Outside AOU* Northern Units | Outside AOU* Southern Units | Total | Private Forest | Federal Forest | Boreal Forest | Great Lakes St. Lawrence & Deciduous | Grand Total |
| **Forested Land** | | | | | | | | | | |
| Productive Forest | 26,004,850.6 | 3,584,157.5 | 4,456,454.7 | 94,060.0 | 34,139,522.8 | 5,764,085.3 | 398,927.4 | 29,672,153.3 | 10,630,382.3 | 40,302,535.6 |
| **Non-Productive Forested Land** | | | | | | | | | | |
| Open Muskeg | 691,952.7 | 83,922.6 | 96,239.8 | 11,012.0 | 883,127.1 | 189,870.9 | 17,405.1 | 676,016.3 | 414,386.8 | 1,090,403.1 |
| Treed Muskeg | 1,232,211.3 | 108,981.0 | 1,035,347.9 | 656.0 | 2,377,196.1 | 136,681.7 | 11,824.0 | 2,226,403.2 | 299,298.7 | 2,525,701.8 |
| Brush & Alder | 846,499.8 | 46,905.5 | 172,524.1 | 5,074.0 | 1,071,003.4 | 235,002.5 | 11,058.1 | 960,521.5 | 356,542.4 | 1,317,063.9 |
| Rock | 388,042.1 | 33,171.9 | 36,785.1 | 3,371.0 | 461,370.1 | 88,350.1 | 10,384.0 | 254,926.8 | 305,177.4 | 560,104.2 |
| Sub-total: | 3,158,705.8 | 272,981.0 | 1,340,896.9 | 20,113.0 | 4,792,696.8 | 649,905.1 | 50,671.2 | 4,117,867.8 | 1,375,405.2 | 5,493,273.1 |
| **Non-Forested Land** | | | | | | | | | | |
| Developed Agricultural Land | 4,520.4 | 889.0 | 0.0 | 13,666.0 | 19,075.4 | 4,602,433.1 | 12,545.0 | 102,125.0 | 4,531,928.5 | 4,634,053.5 |
| Grass & Meadow | 8,089.2 | | 0.0 | 7,983.0 | 16,072.2 | 966,581.5 | 5,223.0 | 34,478.5 | 954,393.1 | 987,876.6 |
| Unclassified Land | 241,087.9 | 9,019.9 | 3,045.0 | 3,599.0 | 256,751.8 | 809,533.8 | 64,917.0 | 236,353.7 | 894,849.0 | 1,131,202.6 |
| Unsurveyed Land | 2,767.0 | 3,106.0 | 0.0 | 0.0 | 5,873.0 | 27,719.0 | 192,624.0 | 6,386.0 | 219,830.0 | 226,216.0 |
| Sub-total: | 256,464.4 | 13,014.9 | 3,045.0 | 25,248.0 | 297,772.3 | 6,406,267.4 | 275,309.0 | 379,343.1 | 6,601,000.6 | 6,979,348.7 |
| Water | 5,627,304.7 | 259,103.5 | 1,138,110.0 | 1,640,433.0 | 8,664,951.2 | 2,110.0 | 9,129.0 | 4,946,471.7 | 3,729,718.5 | 8,676,190.2 |
| Grand Total: | 35,047,325.6 | 4,129,256.9 | 6,938,506.6 | 1,779,854.0 | 47,894,943.1 | 12,822,367.9 | 734,036.6 | 39,115,835.9 | 22,336,506.7 | 61,451,347.6 |
| **Relative Percentages** | | | | | | | | | | |
| Forested Land | 42.3 % | 5.8 % | 7.3 % | 0.2 % | 55.6 % | 9.4 % | 0.6 % | 48.3 % | 17.3 % | 65.6 % |
| Non-Productive Forested Land | 5.1 % | 0.4 % | 2.2 % | 0.0 % | 7.8 % | 1.1 % | 0.0 % | 6.7 % | 2.2 % | 8.9 % |
| Non-Forested Land | 0.4 % | 0.0 % | 0.0 % | 0.0 % | 0.5 % | 10.4 % | 0.4 % | 0.6 % | 10.7 % | 11.4 % |
| All Land Classifications | 47.9 % | 6.3 % | 9.4 % | 0.2 % | 63.8 % | 20.9 % | 1.2 % | 55.6 % | 30.3 % | 85.9 % |
| Water | 9.2 % | 0.4 % | 1.9 % | 2.7 % | 14.1 % | 0.0 % | 0.0 % | 8.0 % | 6.1 % | 14.1 % |
| Total: | 57.0 % | 6.7 % | 11.3 % | 2.9 % | 77.9 % | 20.9 % | 1.2 % | 63.7 % | 36.3 % | 100.0 % |

*AOU – Area of Undertaking

**Appendix 2**
**Management Units in Ontario**
**April 1, 1999**



## Key to Management Units (April 1, 1999) (designated under the Crown Forest Sustainability Act, Section 7)

| MU # | MU Name | Status | Region | MU # | MU Name | Status | Region |
|---|---|---|---|---|---|---|---|
| 448 | Algoma Forest | SFL | NE | 907 | Mazinaw | CR | SC |
| 451 | Algonquin Park Forest | AFA | SC | 716 | Minden | CR | SC |
| 444 | Armstrong Forest | SFL | NW | 733 | Mississagi | SFL | NE |
| 020 | Auden Forest | SFL | NW | 738 | Moose River | CR | NE |
| 465 | Bancroft | CR | SC | 390 | Nagagami Forest | SFL | NE |
| 067 | Big Pic Forest | SFL | NE | 240 | Nakina North Forest | SFL | NW |
| 370 | Black River Forest | SFL | NE | 754 | Nipissing Forest | SFL | NE |
| 178 | Black Sturgeon Forest | SFL | NW | 241 | Ogoki Forest | SFL | NW |
| 173 | Brightsand Forest | SFL | NW | 780 | Ottawa Valley Forest | SFL | SC |
| 175 | Caribou Forest | SFL | NW | 851 | Pic River Ojibway Forest | SFL | NW |
| 520 | Cochrane | CR | NE | 420 | Pineland Forest | SFL | NE |
| 177 | Dog River-Matawin Forest | SFL | NW | 840 | Red Lake Forest | SFL | NW |
| 410 | Driftwood Forest | SFL | NE | 930 | Romeo Malette Forest | SFL | NE |
| 535 | Dryden Forest | SFL | NW | 853 | Sapawe Forest | SFL | NW |
| 545 | Elk Lake | SFL | NE | 868 | Shiningtree Forest | SFL | NE |
| 174 | English River Forest | SFL | NW | 867 | Sioux Lookout Forest | SFL | NW |
| 821 | Flanders Forest | SFL | NW | 040 | Smooth Rock Falls Forest | SFL | NE |
| 833 | Fort Frances Forest | SFL | NW | 990 | Southern Ontario | CR | SC |
| 360 | French-Severn Forest | SFL | SC | 881 | Spanish River | SFL | NE |
| 439 | Gordon Cosens Forest | SFL | NE | 030 | Spruce River Forest | SFL | NW |
| 601 | Hearst Forest | SFL | NE | 889 | Sudbury Forest | SFL | NE |
| 290 | Highrock Forest | SFL | NW | 508 | Superior Forest | SFL | NE |
| 011 | Iroquois Falls Forest | SFL | NE | 898 | Temagami | CR | NE |
| 010 | Iroquois Falls South | SFL | NE | 901 | Timiskaming | SFL | NE |
| 515 | J.E. Martel Forest | SFL | NE | 900 | Timmins | CR | NE |
| 635 | Kapuskasing | CR | NE | 400 | Timmins Forest | SFL | NE |
| 350 | Kenogami Forest | SFL | NW | 120 | Trout Lake Forest | SFL | NW |
| 644 | Kenora | CR | NW | 160 | Upper Spanish Forest | SFL | NE |
| 651 | Kiashke River | CR | NW | 130 | Wabigoon Forest | SFL | NW |
| 869 | Lac Seul Forest | SFL | NW | 940 | Watabeag | SFL | NE |
| 445 | Lake Nipigon Forest | SFL | NW | 949 | Wawa Forest | SFL | NE |
| 796 | Lakehead Forest | SFL | NW | 490 | Whiskey Jack Forest | SFL | NW |
| 688 | Lanark | CR | SC | 060 | White River Forest | SFL | NE |
| 161 | Lower Spanish Forest | SFL | NE | | | | |
| 565 | Magpie Forest | SFL | NE | | | | |

| Status | Forest Management Planning Responsibility |
|---|---|
| SFL | Sustainable Forest Licence |
| CR | Crown |
| AFA | Algonquin Forest Authority |

## Appendix 3
## Forest Management Plans Approved for Implementation in 1996, 1997, 1998 and 1999, Plans Scheduled for Approval and Implementation in 2000, 2001 and 2002

**Forest Management Plans Approved for Implementation in 1996/97**

| Management Unit Name | MU# | District | Remarks |
|---|---|---|---|
| Auden | 020 | Nigigon | 1 year contingency plan, renamed Auden Forest – April 1997 |
| Bancroft | 465 | Bancroft | Formerly Bancroft and Whitney |
| Black River Forest | 370 | Wawa | |
| Black Sturgeon Forest | 178 | Nipigon | |
| Dryden | 535 | Dryden | 1 year contingency plan, renamed Dryden Forest – April 1998 |
| Elk Lake | 545 | Kirkland Lake | |
| Fort Frances | 833 | Fort Frances | Renamed Fort Frances Forest – April 1997 |
| Iroquois Falls South | 010 | Cochrane | |
| Kenora | 644 | Kenora | 1 year contingency plan |
| Lake Nipigon Forest | 445 | Nipigon | |
| Lower Spanish Forest | 161 | Sudbury | |
| Mazinaw | 907 | Bancroft | Formerly Tweed |
| Minden | 716 | Bancroft | Formerly Minden and Leslie Frost Centre |
| Nipigon | 625 | Thunder Bay | 2 year contingency plan, Part of Lakehead Forest MU# 796 – April 1998 |
| Pembroke | 780 | Pembroke | Formerly Bonnechere and Madawaska, renamed Ottawa Valley Forest – April 1999 |
| Red Lake | 840 | Red Lake | 2 year contingency plan, renamed Red Lake Forest – April 1999 |
| Shiningtree | 868 | Timmins | Renamed Shiningtree Forest – April 1998 |
| Sioux Lookout | 875 | Sioux Lookout | Part of Sioux Lookout Forest MU# 867 as of – April 1998 |
| Spanish River | 881 | Sault Ste. Marie | |
| Spruce River Forest | 030 | Thunder Bay | |
| Steel River | 851 | Nipigon | Renamed Pic River-Ojibway Forest – April 1998 |
| Sudbury | 889 | Sudbury | Formerly Wanapitei, Trout Lake and Killarney, renamed Sudbury Forest – April 1998 |

*continued next page*

*96/97 continued*

| Management Unit Name | MU# | District | Remarks |
|---|---|---|---|
| Temagami | 898 | North Bay | 1 year contingency plan, formerly Temagami and Latchford |
| Timmins | 900 | Timmins | |
| Upper Spanish Forest | 160 | Sudbury | |

**Forest Management Plans Approved for Implementation in 1997/98**

| Management Unit Name | MU# | Lead District | Remarks |
|---|---|---|---|
| Auden Forest | 020 | Nipigon | |
| Big Pic Forest | 067 | Wawa | |
| Caribou Forest | 175 | Sioux Lookout | Formerly Caribou West and part Caribou East |
| Dryden | 535 | Dryden | Renamed Dryden Forest April 1998 |
| Hearst Forest | 601 | Hearst | |
| Highrock Forest | 290 | Fort Frances | Formerly Manitou and Seine River Forests |
| J.E. Martel Forest | 515 | Chapleau | |
| Kenora | 644 | Kenora | |
| Lac Seul Forest | 869 | Sioux Lookout | |
| Lakehead Forest | 796 | Thunder Bay | Formerly Port Arthur and Thunder Bay |
| Nagagami Forest | 390 | Wawa | |
| Nakina North Forest | 240 | Nipigon | |
| Ogoki Forest | 241 | Nipigon | |
| Pineland Forest | 420 | Chapleau | |
| Romeo Malette Forest | 930 | Timmins | |
| Superior Forest | 508 | Chapleau | |
| Temagami | 898 | North Bay | 2 year contingency plan |
| Timiskaming | 901 | Kirkland Lake | Formerly Timiskaming and W.L.Plonski |

**Forest Management Plans Approved for Implementation in 1998/99**

| Management Unit Name | MU# | Lead District | Remarks |
|---|---|---|---|
| Cochrane | 520 | Cochrane | |
| Driftwood Forest | 410 | Cochrane | |
| Lanark | 688 | Kemptville | 1 year contingency plan |
| Moose River | 738 | Cochrane | |
| Red Lake | 840 | Red Lake | Renamed Red Lake Forest – April 1999 |
| Timmins Forest | 400 | Timmins | |
| Wabigoon Forest | 130 | Dryden | |
| White River Forest | 060 | Wawa | |

*continued next page*

**Forest Management Plans Approved for Implementation in 1999/00**

| Management Unit Name | MU# | Lead District | Remarks |
|---|---|---|---|
| Brightsand Forest | 173 | Thunder Bay | |
| Elk Lake | 545 | Kirkland Lake | 2 year contingency plan |
| French-Severn Forest | 360 | Parry Sound | Formerly Bracebridge and Parry Sound |
| Kapuskasing | 635 | Hearst | |
| Lanark | 688 | Kemptville | 2 year contingency plan |
| Magpie Forest | 565 | Wawa | |
| Nipissing Forest | 754 | North Bay | Formerly North Bay |
| Temagami | 898 | North Bay | |
| Trout Lake Forest | 120 | Red Lake | |
| Upper Spanish Forest | 160 | Chapleau | 1 year contingency plan |
| Watabeag | 940 | Kirkland Lake | |
| Whiskey Jack Forest | 490 | Kenora | Formerly Patricia Forest and Pakwash Forest |

**Plans Scheduled for Approval and Implementation in 2000**

| Management Unit Name (current or proposed) | MU# | Lead District | Remarks |
|---|---|---|---|
| Algoma Forest | 448 | Sault Ste. Marie | |
| Algonquin Park Forest | 451 | Algonquin Park | |
| Armstrong Forest | 444 | Thunder Bay | |
| Dog River-Matawin Forest | 177 | Thunder Bay | |
| English River Forest | 174 | Dryden | |
| Fort Frances-Flanders Forest | 827 | Fort Frances | Fort Frances Forest (833) and Flanders Forest (821) to be amalgamated |
| Gordon Cosens Forest | 438 | Hearst | Gordon Cosens Forest (439) and Kapuskasing (635) to be amalgamated |
| Iroquois Falls Forest | 012 | Cochrane | Iroquois Falls Forest (011) and Iroquois Falls South (010) to be amalgamated |
| Kenogami Forest | 350 | Nipigon | Formerly Longlac Forest, Nakina Forest and Geraldton |
| Northshore Forest | 680 | Sault Ste. Marie | Mississagi (733) and Spanish River (881) to be amalgamated |
| Sapawe Forest | 853 | Fort Frances | |
| Smooth Rock Falls Forest | 040 | Cochrane | |
| Spanish Forest | 210 | Sudbury | Upper Spanish Forest (160) and Lower Spanish Forest (161) to be amalgamated |

*continued next page*

| Management Unit Name | MU# | Lead District | Remarks |
|---|---|---|---|
| Sudbury Forest | 889 | Sudbury | |
| Wawa Forest | 949 | Wawa | |

**Plans Under Preparation for Approval and Implementation in April 2001 (early renewal information noted)**

| Management Unit Name (current or proposed) | MU# | District | Remarks |
|---|---|---|---|
| Bancroft-Minden Forest | 465/716 | Bancroft | Bancroft and Minden to be amalgamated |
| Black River Forest | 370 | Wawa | |
| Black Sturgeon Forest | 178 | Nipigon | scheduled for early approval |
| Dryden Forest | 535 | Dryden | early renewal by one year |
| Hearst Forest | 601 | Hearst | scheduled for early approval |
| Pineland-Martel Forest | 515/420 | Chapleau | early renewal by one year, J. E. Martel Forest and Pineland Forest to be amalgamated |
| Kenora | 644 | Kenora | |
| Lac Seul Forest | 869/867 | Sioux Lookout | Lac Seul Forest and Sioux Lookout Forest to be amalgamated |
| Lake Nipigon Forest | 445/020 | Nipigon | Lake Nipigon Forest and Auden Forest to be amalgamated |
| Mazinaw-Lanark Forest | 907/688 | Bancroft | Mazinaw and Lanark to be amalgamated |
| Nagagami Forest | 390 | Wawa | early renewal by one year |
| Ottawa Valley Forest | 780 | Pembroke | formerly Pembroke |
| Pic River Ojibway Forest | 851 | Nipigon | formerly Steel River, scheduled for early approval |
| Romeo Malette Forest | 930 | Timmins | early renewal by one year |
| Shiningtree Forest | 868 | Timmins | |
| Spruce River Forest | 030 | Thunder Bay | scheduled for early approval |
| Superior Forest | 508 | Chapleau | early renewal by one year |
| Timiskaming Forest | 545/901/ 940 | Kirkland Lake | Elk Lake, Timiskaming, and Watabeag to be amalgamated |
| Timmins | 900 | Timmins | |

| Plans Commencing Preparation in 2000 for Approval and Implementation in 2002 | | | |
|---|---|---|---|
| **Management Unit Name (current or proposed)** | **MU#** | **District** | **Invitation to Participate – Tentative Date and Remarks** |
| Big Pic Forest | 067 | Wawa | March 2000 |
| Caribou Forest | 175 | Sioux Lookout | February 2000 |
| Crossroute Forest | 290/827 | Fort Frances | March 8, 1999 (planning process initiated early, Highrock Forest and Fort Frances-Flanders Forest to be amalgamated |
| Lakehead Forest | 796 | Thunder Bay | February 2000 |

## Appendix 4
## Forest-dependent Communities (ranked by percentage of forestry workers)

| Census subdivision | Type | 1996 Population | Labour Force | Forestry Workers | % Forestry |
|---|---|---|---|---|---|
| Dubreuilville | Township | 990 | 555 | 360 | 64.9% |
| White River | Township | 1,025 | 555 | 300 | 54.1% |
| Terrace Bay | Township | 2,325 | 1,275 | 605 | 47.5% |
| Carlow | Township | 430 | 140 | 65 | 46.4% |
| Longlac | Town | 2,075 | 1,235 | 570 | 46.2% |
| James | Township | 485 | 235 | 105 | 44.7% |
| Ginoogaming First Nation 77 | Reserve | 220 | 55 | 20 | 36.4% |
| Dack | Township | 480 | 200 | 70 | 35.0% |
| Iroquois Falls | Town | 5,685 | 2,575 | 900 | 35.0% |
| Red Rock | Township | 1,255 | 675 | 230 | 34.1% |
| Smooth Rock Falls | Town | 1,985 | 975 | 330 | 33.8% |
| Dorion | Township | 470 | 245 | 80 | 32.7% |
| Mattice-Val Cote | Township | 935 | 370 | 120 | 32.4% |
| Val Rita-Harty | Township | 1,115 | 495 | 150 | 30.3% |
| Brudenell and Lyndoch | Township | 795 | 350 | 105 | 30.0% |
| Nipigon | Township | 2,205 | 1,090 | 325 | 29.8% |
| Opasatika | Township | 350 | 155 | 45 | 29.0% |
| Chapleau | Township | 2,935 | 1,415 | 410 | 29.0% |
| Rainy Lake 18C | Reserve | 65 | 35 | 10 | 28.6% |
| Espanola | Town | 5,450 | 2,470 | 695 | 28.1% |
| Head, Clara and Maria | Township | 295 | 125 | 35 | 28.0% |
| Baldwin | Township | 695 | 330 | 90 | 27.3% |
| Constance Lake 92 | Reserve | 600 | 185 | 50 | 27.0% |
| Fauquier-Strickland | Township | 690 | 260 | 70 | 26.9% |
| Kapuskasing | Town | 10,030 | 4,655 | 1,200 | 25.8% |
| Sherwood, Jones and Burns | Township | 2,140 | 860 | 220 | 25.6% |
| Ignace | Township | 1,785 | 965 | 245 | 25.4% |
| Atikokan | Township | 4,040 | 1,995 | 505 | 25.3% |
| Duck Lake 7SB | Reserve | 100 | 40 | 10 | 25.0% |
| Moonbeam | Township | 1,330 | 605 | 150 | 24.8% |
| Mattawa | Town | 2,280 | 870 | 215 | 24.7% |
| Nakina | Township | 570 | 265 | 65 | 24.5% |
| Dryden | Town | 6,685 | 3,475 | 840 | 24.2% |
| Barclay | Township | 1,585 | 870 | 210 | 24.1% |
| Airy | Township | 775 | 380 | 90 | 23.7% |

| Census subdivision | Type | 1991 Population | Labour Force | Forestry Workers | % Forestry |
|---|---|---|---|---|---|
| Thessalon Township | Township | 765 | 380 | 90 | 23.7% |
| Thessalon | Town | 1,480 | 510 | 120 | 23.5% |
| Massey | Town | 1,170 | 440 | 100 | 22.7% |
| Wunnumin 1 | Reserve | 455 | 155 | 35 | 22.6% |
| Raglan | Township | 825 | 400 | 90 | 22.5% |
| Hearst | Town | 6,015 | 2,995 | 660 | 22.0% |
| Wollaston | Township | 720 | 300 | 65 | 21.7% |
| Iron Bridge | Village | 780 | 330 | 70 | 21.2% |
| Nipissing, Unorganized, South Part | Unorganized | 605 | 265 | 55 | 20.8% |
| Schreiber | Township | 1,795 | 920 | 190 | 20.7% |
| Glackmeyer | Township | 1,095 | 535 | 110 | 20.6% |
| Hagarty and Richards | Township | 1,675 | 755 | 155 | 20.5% |
| Rainy River, Unorganized | Unorganized | 1,525 | 890 | 180 | 20.2% |
| Hornepayne | Township | 1,455 | 795 | 160 | 20.1% |
| Long Lake 58 | Reserve | 345 | 50 | 10 | 20.0% |

Source: Statistics Canada 1996 Census

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